$3.00 a Year Published Monthly NOV 1 5 15 50c a Copy

VETERINARY MEDICINE

DECEMBER CONTENTS 1946

Veterinary Progress, Policies and Comment

Many Organisms Capable of Developing Tolerance for Sulfonamides, 415; Use of Penicillin Ointment, 415; Guinea Pigs to Africa for Study of Trypanosomiasis, 415; Preferable Breeds for Squab Raisers, 415; Ovaries from Rats to Mice, 415; Comparison of Death Loss in Two World Wars, 415; Honey More Nourishing Than Meat, 415; Illinois Agricultural Ass'n. Adopts New Policy, 416; Prevalence of Equine Encephalomyelitis, 416; National Chamber of Commerce to Oppose "Antis," 416; Silver Anniversary of Insulin Discovery, 416; New Appointments to Veterinary Faculty, 417; Acarian Theory of Equine Lymphangitis, 417; Kelser Receives Medal, 418; Legion of Merit Awards, 418; Army School of Meat and Dairy Hygiene Permanent, 418; Veterinary Corps Officers Separated from the Service, 419; Appointment to Regular Army Veterinary Corps, 419; The Reserve Corps, 420; More Army Veterinarians Needed, 420; The Field of Streptomycin, 421; Clinical Use of Streptomycin, 421; Anthrax Treated with Penicillin, 421; Origin of Viruses, 421; Prices Much Higher Now, 422; 40,000,000 Pounds of Horse Meat, 422; Unknown Factor Improves Palatability, 422; Trichinosis Survey, 422; Garbage Useful for Poultry Feeding, 422; Large Production of Brucella Vaccine, 423; Dairy Income Large, 423; Progress in Grub Control, 423; Blue Back in Turkeys, 423; Vaccination of Imported Dogs, 423; Rabbit Production, 423; Courts Are Peculiar, 423; Louis Pasteur, 424; Antivivisectionists Claims Unfounded, 425; Medical Progress Stems from Animal Experimentations, 425; Mucoid Enteritis in Rabbits, 428; Brahmans to Be Used in Dairy Cattle Experiment, 432; ABC's of Animal Nutrition, 434; Inexpensive Warming Bottle, 443; Protection of Animal Experimentation, 443; Prevent Dry Rot, 443; Nutrition of Animals, 447; Poultry Practice, 451.

83rd Annual Meeting of the A.V.M.A. 426

Penicillin Mastics in the Treatment of Chronic Streptococcic Mastitis 429

New Treatment for Bovine Stomatitis 433

Can Racing Really Be Cleaned Up? 435

Treatment of Traumatic Lesions of Tendo-Achilles by Joint Fixation with Stader Splint 442

Verminous Pneumonia in Dogs and Cats 444

Influence of Estrus on Susceptibility to Brucellosis 446

Parasites Causing Deaths in Foxes 448

Pneumonia in Mink 449

Common Ailments in Canaries 450

Veterinary Practice VI 461

Clinical Reports 452-456

Congenital Diaphragmatic Hernia in a Dog, 452; Internal Splint for Fractured Femur, 452; Bilateral Keratitis with Secondary Glaucoma in a Bitch, 453; Unexplained "Bottle Jaw" in Cattle, 453; Large Bovine Fetuses, 454; Foot Amputation by Bailing Wire, 455; Operation for Urinary Calculus in a Steer, 455; Teniasis in Lambs, 455.

Abstracts 457-459

Consuming Grasshoppers Fatal to Turkeys, 457; Toxicity of Orchard Spray for Swine, 457; Absorption and Excretion of Streptomycin, 457; Vitamin E a Remedy for Muscular Dystrophy in Lambs, 457; Time of Insemination and Fertility, 458; Kidney Lesions in Equine Infectious Anemia, 458; Xanthomatosis in a Dog, 458; Toxicity of Benzyl Benzoate, 458; Comparison of New and Old Insecticides, 459; Pullet Disease or Blue Comb, 459.

Book Reviews 460

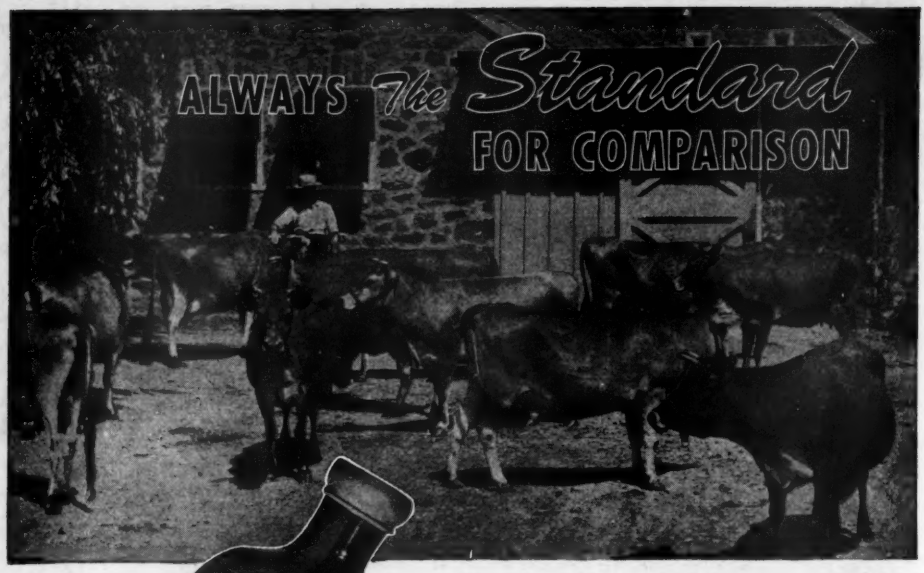
Secretion of Milk, 460; Simple Secrets of Dog Discipline, 460; Practical Veterinary Pharmacology, Materia Medica and Therapeutics, 460; Bulletins, 459.

INDEX 463-470

VOL. XLI
No. 12

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of March 3, 1879.

7632 S. Crandon Ave.
Chicago 49, U.S.A.



SOLD TO VETERINARIANS ONLY

Available from all Jen-Sal Depots at $7.50 per dozen 500 cc. vials; $40.50 per half-gross, and $76.50 per gross—less usual discounts.

NON-PRECIPITATING

D-C-M Solution

Original, patented, distinctive D-C-M contains in each 500 cc. vial a full 18.5% of Calcium Borogluconate, 6.5% Magnesium Gluconate, and 18% Dextrose, with traces of Phosphorus.

When treating milk fever cases, it costs no more to specify D-C-M as insurance against concurrent ketosis and tetany . . . and, less relapses when using D-C-M.

JENSEN-SALSBERY
KANSAS CITY, MISSOURI *Laboratories, Inc.*

VETERINARY MEDICINE

Registered in U. S. Patent Office

VOL. XLI DECEMBER, 1946 No. 12

Published Monthly by the

VETERINARY MAGAZINE CORPORATION

7632 S. CRANDON AVE., CHICAGO 49, ILL., U.S.A.

$4.00 a year; per copy 50 cents; Special Issues $1.00

All matter appearing in this publication is copyrighted. No part of it may be reproduced without specific permission. Permission will be given if the purpose is unobjectionable. If there be any question as to the propriety of reproduction the author will be consulted.

Entered as second-class matter Nov. 8, 1920, at the post office at Chicago, Ill., under the Act of March 3, 1879. Entered as second-class matter under the title of American Journal of Veterinary Medicine July 19, 1910, at Chicago, Ill., under the Act of March 3, 1879.

D. M. CAMPBELL, *Editor*
7632 S. Crandon Ave., Chicago 49, Ill.
Telephone South Shore 7160

H. J. MOSTYN, *Eastern Representative*
P. O. Box 121, Sussex, New Jersey
Telephone Sussex 2F18

COPYRIGHTED, 1946, BY VETERINARY MAGAZINE CORPORATION

All organisms so far studied are capable of developing a tolerance to the sulfonamide drugs if exposed to concentrations inadequate to inhibit their growth.

Six hormones are produced by the anterior pituitary gland. Four of them regulate thyroid activity, suprarenal activity, gonadal function and milk secretion.

Penicillin ointment is the most effective treatment known for chronic blepharitis and conjunctivitis according to Capt. S. H. Stein, M.C. It gives rapid relief from the symptoms and overcomes the infection which was due to staphylococci in a series of 25 cases treated by him.

Recently four consignments of guinea pigs were flown from England to Sierra Leone, Africa, to be inoculated with various species of Trypanosoma and returned to the School of Tropical Medicine in Liverpool for the study of sleeping sickness and experiments with new drugs for the purpose of developing a remedy for the trypanosomiasis in man and animals.

Breeds of pigeons favored by commercial squab raisers are: King (American), Carneau (French), mondaine (Swiss), mondain (French) and giant-homer. Less favored breeds for squab production are: Runt (Spanish), Hungarian and Maltese. There are several sub-breeds such as white king, silver king, black Hungarian, etc. The runt is the largest breed and the giant homer among the smallest breeds.

It is 60 years since the first glass milk bottle was manufactured.

The science of healthy functioning—physiology—is the foundation and the starting point for the science of morbid functioning—pathology.

Sanders (University of Missouri) succeeded in transplanting whole ovaries from rats to mice and *vice versa*. Seven weeks later all implants persisted and had an excellent blood supply.

Research begins not in the laboratory but in the library, for the literature must be explored to see what has already been accomplished in order to avoid duplication of effort. —*Science*.

In World War I the average annual death loss from disease per hundred thousand troops was 1560. In World War II it was 60. The death rate from wounds was 4.5% in the recent conflict and 8.3% in the former.

Honey differs remarkably from the ordinary sugars of the human dietary. It contains glucose, levulose, soluble phosphates of calcium and iron, vitamins A and B, albuminoids, and formic acid. The formic acid assures its conservation by preventing fermentation, and guards against granulation. Only liver of calves and young beeves have equal nutritive values. It is rated as being three times as nourishing as meat and twelve times as nurishing as legumes.—*Enclycopédie Veterinaire Periodique*.

Equine Encephalomyelitis Prevalence

A report by Dr. B. T. Simms, Chief of the federal Bureau of Animal Industry shows 1946 to have been a year of low incidence of equine encephalomyelitis. To Oct. 1, only 1381 cases were reported to the Bureau and only four states, Idaho (120), Oklahoma (119), Kansas (117) and California (101) reported more than 100 cases. Thirteen states reported no cases and one state, Indiana, made no report.

Illinois Agricultural Association Adopts New Policy

The Illinois Agricultural Association has selected Dr. C. D. Van Houweling, recently discharged from the Army Veterinary Corps, to head its new Department of Veterinary Medical Relations.

Doctor Van Houweling will serve as veterinary technical advisor to the Illinois Agricultural Association and associated organizations and as liaison representative with the veterinary profession of Illinois.

The doctor was born on a farm in Iowa and was graduated in 1942 from the Division of Veterinary Medicine, Iowa State College. He had practiced in central Illinois before entering service in the Army Veterinary Corps, in which he served for three years—his last station being at the Quartermaster Depot in Kansas City.

National Chamber of Commerce to Oppose "Antis"

Research on animals for the development of life-saving medical knowledge has been endorsed by the Chamber of Commerce of the United States in a statement of policy released recently.

The statement submitted to a referendum vote of member organizations was as follows:

"In view of the great progress that has been made in preventive and curative medicine and surgery through animal research and the prospect of even greater progress in the future, the National Chamber is unalterably opposed to the prohibition of this scientific procedure. Such a prohibition would seriously hamper all medical progress."

Result of the vote was: 2424 organizations in favor of the statement, 18 against. Represented in the poll were slightly over a million business men.

Mr. Howard Strong, secretary of the Health Advisory Council of the Chamber, in a letter to Dr. A. J. Carlson, president of the National Society for Medical Research, announced the outcome of the Chamber of Commerce referendum and said, "We are therefore now in a position to present the Chamber's opposition to any antivivisection legislation wherever such legislation rears its head and when advisable and possible, a representative of the Chamber can appear in opposition."

Anaphylaxis, Atopy, Allergy

Anaphylaxis is that form of hypersensitivity which occurs chiefly under experimental conditions in animals, and occasionally in the course of serum therapy. It is always a sequel to the injection of some foreign, substance, usually protein in nature.

Atopy, natural hypersensitivity, or idiosyncrasy, includes the various human conditions of asthma, hay fever urticaria, etc., and possibly analogous conditions in animals. It is claimed that in most cases this sensitivity has a genetic basis.

Allergy is the form of hypersensitivity which occurs in bacterial infections and in some parasitic disease.—*Davies* in *Veterinary Record.*

Silver Anniversary of Insulin Discovery

An appeal to enlightened citizens to refrain from supporting antivivisection activities was issued by the American Diabetes Association at its recent meeting in Toronto celebrating the silver anniversary of the discovery of insulin.

The appeal was made on the basis of the role played by experimental dogs in the development of insulin.

The resolution adopted by the Association reads as follows:

"Whereas the American Diabetes Association at this meeting is commemorating the 25th anniversary of the discovery of insulin; and whereas insulin has been instrumental in restoring the health and saving the lives of countless human beings suffering from diabetes; and whereas the great work of Banting and Best in discovering insulin, and the subsequent scientific investigations clarifying its actions and uses, would have been impossible without the use of dogs and other domestic animals as experimental subjects; therefore be it resolved that the American Diabetes Association hereby testifies to the value of the use of dogs and other domestic animals for purposes of scientific research; and urges all enlightened citizens to refrain from supporting the misguided efforts of so-called antivivisectionists, who constantly try to hamper the advancement of scientific medicine."

Four million persons now living in the United States are using insulin or will later have to use it to prolong their lives. That is 4,000,000 justifications for animal experimentation.

New Appointments on Veterinary Faculty

The appointment of Drs. Stephen B. Hitchner, Raymond E. Watts and Theodore W. Millen to the staff of the College of Veterinary Medicine, University of Illinois, has been announced of recent date by Dean Robert Graham.

Dr. Hitchner (left), an instructor in avian pathology and hygiene in the college, is a native of New Jersey and was graduated from Rutgers University and the School of Veterinary Medicine, University of Pennsylvania, 1943. During the late war he was a captain in the Veterinary Corps

Dr. Millen (center) is assistant in veterinary pathology and hygiene at the college. He is a native of Illinois and has a bachelor's degree from Monmouth college and received his master's and veterinary degrees (1939) at Iowa State college. While in India, Doctor Millen was on the faculty of three Indian universities being the head of the Department of Animal Husbandry at the Agricultural Institute, Allahabad, India, from 1940 to 1946

Dr. Watts (right), extension veterinarian at the college, is a native of Colorado and was graduated from the Division of Veterinary Medicine, Colorado State College, 1942. He practiced in Wisconsin for a year and served in the Veterinary Corps 1943-46 from which he was discharged with the rank of Captain

Acarian Theory of Equine Lymphangitis

The acute disease of work horses commonly designated as lymphangitis, the pathology of which has bewildered investigators throughout the history of veterinary medicine, is pronounced an acarian infestation of the pastern in a wartime issue of *Recueil de Médecine Vétérinaire* by Ries of Luxembourg who isolated colonies of mange mites of the genus Symbiotes from skin lesions, which he held responsible for both the acute phase and the chronic elephantiasis that often follows recurrent attacks. A toxic but unknown agent absorbed and conveyed by the lymphatic vessels accounts for the symptoms. Localized mange of the pasterns was described as a definite entity by German authorities in the middle of last century and their findings were confirmed by Reis in 1911 but its relation to nonsuppurating lymphangitis, if suspected, was not then reported. In brief, Reis in 1940 appears to have proved that this mysterious malady is an acarian-toxic infection manifested by exacerbation and remissions independent of septic microörganisms.

Ries attributes the acute illness of the animal to an unknown toxic agent. However, attacks of noninfectious, acute lymphangitis are typical of allergic attacks. The suspicion that these attacks may be due to an allergy is heightened by the frequency of allergic attacks in man due to mites. Urbach relates an instance of all 21 employes of a grain mill suffering an allergic attack after processing a quantity of grain infested by mites. An investigation determined the mites to be the inciting agent. He also states that mites in old furniture upholstery are a common cause of allergic attacks in upholsterers. Handlers of figs and other dried fruits suffer attacks of asthma from the myriads of mites that sometimes inhabit processing plants. The urticaria caused by infestation with grain itch mites is well known. Various veterinarians have suffered acute allergic attacks after treating dogs infected by the sarcoptic mange mite. All of which does not prove that the attacks of lymphangitis that strike suddenly and reach their height in 12 hours or less, completely incapacitating a horse, is an allergy, but since the cause is not definitely known, and cathartics—the routine internal treatment—is far from satisfactory, it justifies the trial of antiallergic treatment — epinephrine, benadryl, pyribenzamine, torantil.

Kelser Receives Gorgas Medal

The Gorgas Medal, sponsored by Wyeth Incorporated, of Philadelphia, and awarded annually by the Association of Military Surgeons of the United States for outstanding work in preventive medicine for our armed forces, went this year to Brigadier General Raymond A. Kelser, V.C., for his work in eradicating rinderpest, a disease of cattle, in the Philippine Islands, making it possible for the Filipinos to have their own domestic milk supply. During the late war General Kelser was Director of the Army Veterinary Corps. Now retired from active service, he is dean of the School of Veterinary Medicine and professor of Bacteriology, University of Pennsylvania. He was awarded the medal at a dinner given in his honor during the annual convention of the Association of Military Surgeons of the United States, at the Book-Cadillac Hotel in Detroit, on 9 October, 1946.

Legion of Merit Awards

Colonel Elmer N. Young was awarded the Legion of Merit in Shanghai for meritorious conduct in the China theater 5 May, 1945, to 30 April, 1946.

By direction of the President, the Legion of Merit for exceptionally meritorious conduct in the performance of outstanding services during the period December 1941 to March 1946, was awarded by the War Department to Major Thomas C. Jones, Veterinary Corps, United States Army.

By order of The Secretary of War:

DWIGHT D. EISENHOWER
Chief of Staff

Lieutenant Colonel Richard A. Huebner, V.C., was awarded the Legion of Merit 26 December, 1945, for exceptionally meritorious conduct in the performance of outstanding services as Chief of Biological Products Section, Production Control Division, Office of the Chief Surgeon, United States Forces, European Theater, from 9 June, 1945 to 10 September, 1945. Lieutenant Colonel Huebner demonstrated forbearance, understanding and coordinative ability in applying himself to the problems that confront an occupying army insofar as they bear on the public health and general welfare. He contributed directly to the accomplishments of the Medical Department by guaranteeing the continued flow of biological products essential in the control of human and animal disease. Lieutenant Colonel Huebner's outstanding performance of duty and superior scientific knowledge demonstrated in this assignment reflects the highest credit upon himself and the armed forces of the United States.

By Command of General McNarney.

Army School of Meat and Dairy Hygiene Made Permanent

The one thousandth veterinary officer was graduated from the Meat and Dairy Hygiene School at the Chicago Quartermaster Depot June 12, 1946. The school, which was established in the fall of 1940 to give special training to veterinary inspectors of food for the Armed Forces, is being continued as a part of the Army's peacetime program. The meat and dairy hygiene course was increased from a period of six weeks to eight weeks beginning with the 50th class which reported for instructions 22 July 1946. According to present plans, the course will be lengthened to 12 weeks within the next few months.

The course of instruction in the Meat and Dairy Hygiene School is undergoing constant change in order to keep it abreast of the numerous developments in the food industry and to better qualify veterinary officers for the exacting duties and requirements of food inspection and analysis work. Students and faculty alike have access to the latest books, publications and journals of the food industry, all of which are maintained in the library of the school, which is considered one of the best and most up-to-date libraries of its kind in this country.

Several outstanding scientists and specialists, authorities in their fields, appear before each of the classes as guest lecturers and demonstrators, to familiarize both the factulty and students with the most recent developments in the food industry and present trends in food inspection and analysis. Dr. C. S. Bryan, Michigan State College, has given much valuable assistance as a guest lecturer in the methods used in the inspection of dairies and dairy plants and the laboratory analyses of milk and other dairy products. The latest and most scientific data on the various types of food poisonings and intoxications are discussed by such leaders in their field as Dr. G. N. Dack, Professor of Bacteriology, University of Chicago, and Dr. L. D. Jensen, President of the Society of Illinois Bacteriologists.

To assist veterinary officers in food inspection and analysis work, a Research and Development project has been established in the Meat and Dairy Hygiene School to study and improve food inspection and analysis equipment. This will be a continuing project, since

constant developments in the food industry are foreseen.

The school staff, which is under the direction of Colonel Frank M. Lee, V.C., Depot Veterinarian, includes Major Donald C. Kelley, Director, and Captains Mulford C. Lockwood, V.C., and Richard L. Stowe, V.C., Instructors.

Veterinary Corps Officers Separated from the Service Since VE-Day

(Supplement to lists previously published)

Alabama

Fancher, James Mathis

California

Crowl, W. B., Jr.
Eville, Thos. B.
Hensley, John H.
Irvin, Chas. E., Jr.
Koebel, Floyd W.
Lapham, Robert F.
Morris, John T.
Stansbury, Wm. M.
Stowe, Richard L.
Votaw, Floyd C.
White, Leslie C.

Colorado

McChesney, Arthur C.
Nicholes, Max M.

Georgia

Fichandler, Philip D.
Thrasher, John P., Jr.

Illinois

Winslade, Jack L.

Indiana

Blood, Benjamin D.

Iowa

Rafoth, Leslie J.
Rossing, Tedmar D.
Smith, Earl P.
Thompson, F. Wm., Jr.

Kansas

Burkert, Lester H.
Donahue, Dennis R.
Flory, Oliver E.
Lumb, William V.
Minnis, Russell G.
Mohney, Leonard W.
Porter, Henry D.
Swenson, Melvin J.
Wagers, Robert P.

Louisiana

Caraway, Hugh L.

Maine

Liscomb, John M.

Minnesota

Crawford, Frank W.
Foelschow, Leslie O.
Isaacson, Lloyd L.
Penticuff, C. M., Jr.

Mississippi

Rhoades, Mervin G.

Missouri

Ingmand, Eugene B.
Hayes, Eldon F.

Nebraska

Cook, Raymond H.
Kelsall, Samuel

New Jersey

Harrison, John H.
McCoy, John R.
Swope, Robert E.

New York

Becker, Milford E.
Charles, Arthur S.
Conklin, Erwin A.
Everly, Wm. P.
Kirvin, Wm. R.
Wright, Fred. O.

Ohio

Carl, Gilbert W.
Hicks, Joseph M.
Lusk, David E.
Patton, Clyde A.

Pennsylvania

Altaker, Robert R.
Deubler, James A.
Mackey, W. L., Jr.
Mattern, George W.

Tennessee

Llewellyn, Lew O.

Texas

Jones, Claude K.
Scruggs, John H.

Virginia

Harman, C. C.
Larsen, Burt W.

Washington

Harris, Fred M.

Appointment in Regular Army Veterinary Corps

The provisions of Public Law 670—79th Congress provides for increasing the commissioned strength of the Regular Army from 25,000 to 50,000 by the procurement of additional male officers and their integration into the permanent establishment.

Public Law 670 coupled with the postwar plans of the Medical Department provide for an extremely attractive career with outstanding opportunities for professional advancement, as well as a secure and interesting life. Appointments under this law will be made in four increments during the calendar year 1947.

Public Law 670—79th Congress is basically an extension of Public Law 281—79th Congress which increased the commissioned strength of the Regular Army to 25,000 and under the provisions of which approximately a hundred officers were tendered commissions in the Regular Army Veterinary Corps during the first integration program recently completed. Administrative instructions for the implementation of the provisions of Public Law 670 were promulgated in War Department Circular No. 289, 24 September 1946. This circular prescribes the following provisions and procedures with regard to application for an appointment in the Regular Army Veterinary Corps:

Any male veterinarian who is a graduate of an acceptable veterinary college legally authorized to confer the degree of doctor of veterinary medicine or its equivalent and who served on active duty as a commissioned officer in the Army of the United States or any component thereof at any time between 7 December 1941 and 31 December 1946 and is now on active duty or has been separated therefrom under honorable conditions is eligible to apply for appointment in the Veterinary Corps. Appointments will be made in the grades of first lieutenant, captain or major. The grade and rank of an appointee will be determined in accordance with the amount of constructive service or actual commissioned service, *whichever is the greater*, with which he is credited. Credit will be determined as follows:

a. Constructive Service.—Credit will be given for the number of years, months and days by which the applicant's age on the date of appointment exceeds 25 years; *provided* that no person will be appointed in the Medical, Dental, Veterinary or Pharmacy Corps if on appointment he would receive credit for 20 or more years of service, or has attained his 45th birthday.

b. Actual Commissioned Service.—Credit given to applicants will be the number of years, months and days the applicant was on active Federal Service as a commissioned officer in the Army of the United States or any of its components between 7 December 1941 and the date of his appointment in the Regular Army, provided that in computing the total period of the active Federal Service of any such person who was honor-

ably discharged or placed on inactive service subsequent to 12 May 1945, he shall be credited with service from the date of such discharge or relief from active duty to date of appointment.

The following table indicates the grades provided for Medical Department officers selected for appointment, based on actual or constructive service (actual age at appointment minus 25 years). Either actual commissioned service *or* constructive service may be used, whichever gives the greater credit:

Medical, Dental and Veterinary Corps

Actual Commissioned Service	*Constructive Service (age)*	*Grade*
Less than 3 years	25 to 27 years of age incl.	1st Lt.
Three or more years but less than 12	28 to 36 years of age incl.	Captain
Twelve or more years but less than 20	37 to 44 years of age incl.	Major

Provided that no officer will be appointed in a grade higher than that held by him while on active duty and prior to separation, except that an officer whose attained active duty grade was first lieutenant may be appointed in the grade of captain if his attained age on 31 December 1946 does not exceed 31 years. Similarly, a captain may be appointed in the grade of major if his attained age on 31 December 1946 does not exceed 40 years. No officer will be appointed in a grade lower than that for which he is eligible by service credit.

Formal complete applications will be required only from those who have not previously applied and from prior applicants who were disqualified for reasons of physical disability or statutory ineligibility, or who failed to submit application within the prescribed period. Those officers who applied under the provisions of WD Circular 392, 1945, and whose applications were received prior to 1 March 1946 and who have not been tendered commissions or notified that they are not acceptable will be considered for appointment under the provisions of Public Law 670. Such officers will be required to supply additional information on forms forwarded to them by the Adjutant General.

Every person now submitting an application for appointment will be required to pass a general survey test and physical examination, submit biographical information and be interviewed by a board of officers at the screening center designated by the Army Commander within whose area the applicant resides.

Applications will be submitted so as to reach the Army Commanders *not later than 31 December 1946*. Applications must be made on WD AGO Form 62, 1 September 1946, and submitted in triplicate. The original and both copies must be signed. Applications on which the mailing postmark is later than 31 December 1946 will *not* be considered. Blank forms may be obtained from any Army Headquarters or any post, camp or station.

The three completed copies of the application will be forwarded as follows:

a. An applicant on active duty will submit the application in triplicate through his immediate commanding officer.

b. An applicant not on active duty will submit the application in triplicate to the Army Commander of the area in which he resides.

* * * *

The Reserve Corps

About 330,000 officers of the Army have accepted commissions in the Officers' Reserve Corps, and more than 370,000 enlisted personnel have enlisted in the Enlisted Reserve Corps, War Department officials announced on 22 April, stressing that the entire Organized Reserve program is on a voluntary basis.

Assignment of officers and enlisted men to units of the Organized Reserves will be predicated on the willingness of the individual officer or enlisted man to devote the necessary time for training with the unit. Attendance at unit schools and meetings and acceptance of periods of active duty are optional and will not be required of any member of the Organized Reserves. However, any officer or enlisted man who wishes to qualify for promotion and advancement within the Reserve Corps will be expected to devote the time necessary for development of his professional qualifications. —*Bul. U. S. Army Med. Dept.*, 6:3, p. 244.

* * * *

More Army Veterinarians Needed

The Army's current procurement objective to commission 200 veterinarians from civil life in the Army of the United States had been less than 50% attained on October 1, 1946. Applications for temporary commissions are still being actively solicited. This objective must be met during 1946 if the profession's record of efficient military veterinary service is to be maintained.

Vacancies for permanent commissions in the Veterinary Corps of the Regular Army are filled only by integration into the Regular Army of those who served under a temporary commission prior to December 31, 1946. Only those officers who have had active service since December 7, 1941, or who may be issued temporary commissions and are on active duty prior to December 31, 1946, are eligible to apply for integration into the Regular Army.

Necessary forms for submitting an application for a temporary commission may be obtained by writing to the Chief, Veterinary Division, Office of The Surgeon General, The Pentagon, Washington 25, D. C.

The Field of Streptomycin

A comprehensive report on the use of streptomycin by a committee of the National Research Council was released recently. It is based upon a study by 55 investigators and summarizes the results of the use of this new antibiotic in 1000 cases. Streptomycin therapy was spectacularly successful in tularemia and of great value in infections of the urinary tract. In influenzal meningitis it proved markedly more efficacious than other known treatments and it exerted a favorable effect in bacteremia. No conclusions were reached in the matter of tuberculosis other than "it has an inhibitive effect on the growth of the tubercle bacillus and should be helpful in tuberculosis when combined with other established methods of treating this infection." Results were disappointing in the treatment of typhoid, Salmonella and Brucella infections.

Clinical Use of Streptomycin

Streptomycin is an antibacterial agent of low toxicity, possessing selective therapeutic activity against a variety of pathogenic organisms. First isolated in 1944 by Selman A. Waksman at the New Jersey Agricultural Experiment Station, Rutgers University, streptomycin is produced by certain strains of the actinomycete, *Streptomyces griseus*.

The most useful antibacterial property of streptomycin is its effectiveness against gram-negative organisms. Although streptomycin also exhibits significant antibacterial activity *in vitro* and *in vivo* against some gram-positive bacteria, it is usually less efficient in this respect than is penicillin.

Streptomycin is indicated in the treatment of infections due to susceptible gram-negative organisms. It is not a substitute for penicillin in the treatment of infections caused by gram-positive, penicillin-sensitive organisms. Moreover, streptomycin should not be considered an alternative agent in the presence of a penicillin-fast organism, unless the pathogen is found to be susceptible to therapeutic concentrations of streptomycin.

It is important to note that ordinarily susceptible organisms may develop "fastness" to streptomycin. Because such resistance to streptomycin may occur very rapidly, sometimes within a period of 24 to 48 hours, it is essential the infection be brought under control as quickly as possible with effective dosage. When organisms develop resistance to streptomycin through exposure to inadequate quantities of the drug, even greatly increased dosage may fail to control the infection.—*The Story of Streptomycin, Merck.*

Major Harold V. Ellingson, M.C. *et al.* report *(J. Am. Med. Assn.)* the treatment of 25 cases of anthrax infection of the skin (malignant carbuncle) with penicillin. From one million to four million units were required. All patients recovered. In some the organisms disappeared from the lesions within 24 hours after the administration of penicillin was commenced.

In abdominal surgery make your incision twice as long as you think it should be; then you won't have to enlarge it much. The small incision is the vice of the callow, the cosmetic and the commercial; it means at best more retraction and more trauma than is really necessary, at worst a job poorly done or a necessary job left undone.—*Sir Heneage Ogilvie.*

Origin of Viruses

A virus in the broader sense is a contagium of disease. As used in older medical literature the word applies to any organism or toxin capable of producing disease. In a restricted sense a virus is a pathogenic organism which does not multiply in media other than the living cells of a susceptible host and which passes through standard filters capable of holding back bacteria.

The common view is that viruses are degraded descendents of pathogenic bacteria (or protozoa, spirochetes or fungi). In adaptation to an intracellular existence they have lost the power of chemical synthesis which is no longer necessary to their indefinite survival in successive hosts.

Another hypothesis as to the origin of viruses is that they are fragments of higher forms of life which have found ways of surviving by passing from host to host. A third assumption is that viruses are descendents of precellular forms of life which failed to survive except through the adoption of intracellular parasitism.

Burnet[1] writes "We can state dogmatically that there is no evidence whatever that any virus, whether its host be animal, plant or bacterium, arises *de novo*. Every virus particle like any other organism derives by genetic descent from some similar particle and in its turn possesses the power to produce under appropriate conditions replicas of itself." Medical practice, public health work and present investigation are firmly based on the principle that virus diseases breed as true to type as other infectious diseases.

[1] Burnet, F. M.: Virus as Organism: Evolutionary and Ecological Aspects of Some Human Virus Diseases, Cambridge, Mass., Harvard University Press, 1945.

Prices Much Higher Now

Prices of choice lots of meat animals at the Union Stockyards (Chicago) during 1917 were reported as follows by John J. Ferguson of Swift & Company in his address before the 1918 meeting of the American Veterinary Medical Association at Philadelphia:

Cattle, September 19	$17.90 per cwt.
Hogs, August 21	20.00 per cwt.
Sheep, May 12	16.00 per cwt.
Lambs	20.60 per cwt.

The increase over 1916 for average grades were 24.1% for cattle; 70.3% for hogs; 30.1% for sheep and lambs; and an over-all average increase of 34.8%.

40,000,000 Pounds of Horse Meat

The procurement of 40 million pounds of pickled and canned horsemeat for UNRRA, was begun in February, 1946. Purchase awards have been made to slaughterers and processors which will permit delivery on the entire amount before the end of the year. UNRRA has advised the USDA that it will not issue further requisitions for this product.

USDA officials pointed out that the full cooperation of the trade in providing new facilities for carrying out the special program has been largely responsible for its early completion. Before the program was initiated, only limited plant capacity was available in this country for slaughtering and processing horsemeat under federal inspection.

Unknown Food Factor Improves Palatability

Nutrient X, an unidentified food factor, appearing to have the properties of a vitamin, apparently plays an important part in the "palatability" of foods, but, in spite of its indicated importance in tomorrow's nutrition, it is still a puzzle to nutrition workers and food chemists, according to an announcement by A. M. Hartman and C. A. Cary of the United States Department of Agriculture to the American Dairy Science Association at Ames, Iowa, June 17. They have found X present in several milk products, and in other foods and feeds—lettuce, egg yolk, beef muscle and pork muscle, in bluegrass and alfalfa, and in alfalfa and timothy hays. The X in a cow's diet is supplied by the X in her pasturage and hay. She does not get X from grain feeds.

The X in the diet is so essential that the experimenters have found that while rats on a diet relatively high in protein (65 % protein) usually died if X was lacking, they lived and grew 85% of normal on the same diet when it was supplemented by nutrient X.

Injecting sows with pregnant mare serum resulted in an average increase in fecundity of one pig per litter according to a report of Lavadovsky to U.R.S.S. Academy of Science.

It is impossible to estimate the exact losses in farm flocks, because as yet there are no accurate methods of reporting the mortality in poultry due to diseases. The fight against disease must be carried on more vigorously and successfully if this new menace is not to continue as a serious handicap to the poultry industry.—*L. D. Bushnell.*

Trichinosis Survey

In a trichinosis survey in California, made by the state and U. S. public health services, the diaphragms from 7034 swine from 897 farms were examined. Infected animals from 59 farms were found. The frequency of infection was 12 times as great in garbage fed hogs

The infection was 12 times greater in garbage fed hogs than in grain fed animals

as in grain fed. The infection in the grain fed hogs was probably from kitchen scraps containing pork scraps from garbage fed swine. No infected animal were found on farms where cooked garbage was fed.

Garbage Useful for Poultry Feeding

During the war the population of Oahu increased to a point where there was more garbage produced than the swine on the island could utilize. Since all poultry feed had to be imported from the mainland, the usefulness of garbage for feeding poultry was investigated. The fresh garbage contained 85% water which was removed by combined air and artificial drying. On a dry weight basis the garbage contained 23.5% protein, 28.6% fat, 40% non-nitrogenous materials and 2% fiber. By extracting the fat, marketable oils were obtained and the residue when supplemented constituted a valuable feed for poultry.

The federal B.A.I. produced 192,215 doses of strain 19 Brucella vaccine for official use during 1945. More than three million doses, 15 times as much, was manufactured by commercial laboratories for private use.

Milk producers in the United States received more than three billion dollars for the milk, cream and home-made butter marketed in 1945. Milk, cream and butter produced and consumed on the farm had a value of 562 million dollars. In addition, producers received nearly 500 million dollars in subsidy payments.

Progress in Grub Control

Cattle grub control in California during the past season included scrubbing 17,820 and spraying 197,886; a total of 215,706 cattle treated in 48 counties. The cattlemen participating in the control program, which was

Position of cattle grub beneath the skin

sponsored by the extension service of the University, numbered 3028. The growth of this work in three years has been as follows: 1943-44 number of cattle treated 10,000; 1944-45, 123,639; 1945-46 as stated 215,706.

Studies of abortions in mares, sporadic and enzootic, in the Valley of the Danube incriminated a variety of equine influenza virus as the causal agents. The abortions occurred chiefly during the eighth or tenth months of gestation and often were complicated with pulmonary infections. The fetal envelopes and secretions and the fetus itself were found to contain the contagious agent.—*Zeit. f. Infekt. u. Hyg.*

A detailed study of "blue back" in turkeys at the Purina Research Farm showed the condition to be due to depluming the area involved and exposure to the sunlight. Feather removal results from cannibalism, feather picking and treading of hens by toms. However, if the denuded backs are not exposed to sunlight the blue black pigment is not developed. By housing the birds for three or four weeks immediately before marketing them the color fades and they bring a better price.

Increasing Vitamin in Diet Increases Longevity

In an experiment with a large number of rats at Columbia University it was discovered that their average life span could be lengthened 14% by doubling the vitamin A in the diet above the recommended allowances of the National Research Council.

Vaccination of Imported Dogs

According to the *Dog World* 22 of the 48 states require imported dogs to have been vaccinated against rabies. However, five states—Montana, North Dakota, Oregon, Nebraska and Vermont require vaccination only if rabies has existed within 25 to 100 miles of the point of origin within six to nine months. [Directions for ascertaining this information not given].

Rabbit Production, Los Angeles Co., California, in 1945

147,600	Producing Does	@ $10.00	$1,476,000
41,500	Junior Does	5.00	207,500
20,800	Senior Bucks	12.00	249,600
11,600	Junior Bucks	7.00	81,200
3,418,100	Fryers	1.30	4,443,530
170,000	Roasters	1.90	323,000
3,050,000	Fryer Pelts	.27	823,500
260,000	Mature Pelts	.55	143,000
Total—Rabbit Production			$7,747,330

Courts Are Funny

A very silly and, perhaps for that reason, a very popular radio program, is titled "People Are Funny." A recent occurrence in Chicago would seem to put some policemen and some judges in the same classification.

One day in June when meat was scarce in the city the police took three meat dealers into court, charging them with the sale of horse meat in violation of a city ordinance. They were fined $200 each, the maximum penalty provided in the law. In passing sentence the court stated it was recognized that horsemeat is nutritious and wholesome but since its sale was prohibited it couldn't be inspected and *the sale of uninspected meat is dangerous to the consumer*. The inconsistency lies in the fact that at that time sales of uninspected meat on the black market in Chicago was certainly a thousand times as great as the sale of horse meat. Apparently neither police nor court was interested in protecting the public from the danger incurred in consuming uninspected black market meat.

BUY U. S. SAVINGS BONDS

Louis Pasteur

In France suitable exercises are being held this month to commemorate the 50th anniversary of the death of Louis Pasteur, who died in December, 1895. But for the war the commemoration would have taken place last year.

Louis Pasteur was, by training, a chemist; not a physician, nor a veterinarian; yet his contributions to medical and veterinary science far exceeded his discoveries in the field of chemistry, which were by no means small.

Pasteur was born in Dole, a village in France, December 27, 1822. He was the son of a tanner who had been a sergeant in Napoleon's army. It is said that Pasteur père's admiration for the career of the "Little Corsican" was responsible for his ambition to give his son an education much better than that which was usual for one in his station.

At the age of 26, Pasteur had attained an international reputation by his studies of tartaric acid. In rapid succession he held the positions of Professor of Physical Sciences at Dijon, Professor of Chemistry at Strasbourg, Dean of the Faculty of Sciences at Lille, Science Director of the École Normale at Paris, Professor of Geology, Physics and Chemistry at the École des Beaux Arts and, at the age of 45, Professor of Chemistry at the Sorbonne. After 1875 he carried on his researches at the Pasteur Institute.

Pasteur's studies of tartaric acid, which had first brought him fame, were made on this substance as developed in wine and when, in 1854, the brewers were experiencing great losses from failure of fermentation in many of their vats, they turned to Pasteur, then dean of the Faculty of Science at Lille, for the solution of their problem. This resulted in his famous discovery of the processes of fermentation. It also started Pasteur on his amazing career of achievement in the field of biology, the study of which occupied the remainder of his life.

Before Pasteur was born, Spallanzani had demonstrated the falsity of the theory of spontaneous generation, but his work had received but partial acceptance in scientific circles and elsewhere no credit at all. Following his studies of fermentation, Pasteur set about proving that all life derives from life, and so thoroughly did he explode the theory of spontaneous generation that it became a scientific *faux pas* to entertain the thought that any disease might result from other than infection. This ascendancy of bacteriology continued for more than a half century and delayed materially progress in the study of nutritional diseases. In fact, nutritionists still have to struggle with bacteriophobia for acceptance of their findings. However, this work revolutionized surgery and gave birth to preventive medicine. "Permit me," wrote Lister,

Through his experiments Pasteur exploded for all time the theory of spontaneous generation

"to thank you for having given me the single principle which has made antiseptic surgery a success."

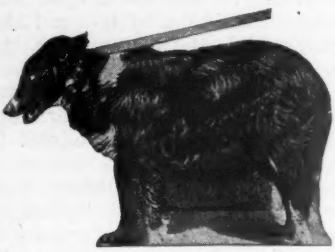
The silk industry of France was menaced by pébrine, a disease of the silkworm, and in 1865 Pasteur went to southern France to study this disease. Within three years he was completely successful and prosperity returned to southern France. Ten years later, it was stated that the value of his services to the brewing industry and the silk industry had already equaled the amount of the war indemnity—a billion francs —imposed upon France following the Franco-Prussian War.

From 1875 to his death in 1895, Pasteur spent 20 fruitful years on research into the diseases of men and animals, principally the latter. Although severely handicapped by ill health in his later years, the value of his services to mankind were beyond all computation. He proved that anthrax is an infection, discovered its mode of transmission, and developed a vaccine for its prevention. He did the same for fowl cholera.

For at least two thousand years before the time of Pasteur, rabies had been a horror to mankind, and Pasteur's popular fame is due more to his development of a vaccine for the prevention of this disease than to any other single achievement. In going through old veterinary journals it is noted that practically every issue mentioned deaths of persons from rabies; mentioned quite incidentally in con-

nection with a discussion of the disease in animals. It was certainly no rarity before Pasteur's time. The apprehension of the victim of the bite of a rabid dog is distressing even now; how much greater it must have been before Pasteur's discovery gave him hope of survival!

In the fields of chemistry and industry the discoveries of Pasteur received immediate acclaim. When his work led him into the field of medicine and public health, his path was often rough. Too earnest to be diplomatic, he often offended leaders in the medical profession. Too enthusiastic to be modest, he sometimes gave them ground for criticism, which they exploited to the limit. In plain words, he was more than a bit cocky. Fortunately for



The popular fame of Pasteur is mostly due to his development of a vaccine for the prevention of rabies

Pasteur and for the public, veterinarian Henri Bouley, a leader in the field of science in France and president of the French Academy of Science, was a staunch friend of Pasteur and a powerful supporter of his theories. But for the enthusiastic support of Bouley and through him, of the whole veterinary profession of France, acceptance of Pasteur's medical discoveries would undoubtedly have been delayed for years.

In America, too, Pasteur's discovery of a means of preventing rabies was first accepted by the veterinary profession. It is noteworthy that the first victim of a mad dog to go from the United States to Paris for the Pasteur treatment was taken there by a veterinarian —Dr. Frank Billings of Lincoln, Nebraska. It was, of course, owing to Bouley's prestige in this country that Pasteur was readily accepted by American veterinarians.

Pasteur's contributions to knowledge of veterinary science were enormous, and the more astounding when it is remembered that his studies were handicapped by laboratory technic extremely crude and laboratory appliances almost unbelievably primitive. Veterinary medicine is deeply indebted to the genius and industry of Pasteur and it is appropriate that veterinarians should pay tribute to his memory when occasion offers. Maurice C. Hall once said that if the veterinary profession of America could produce a Pasteur, its problem of winning public recognition would be solved for all time.

Antivivisectionists Claims Unfounded

"Antivivisectionists contend that experimental surgery isn't necessary. Here again, they have difficulty in supporting their case. Harvey Cushing developed his delicate brain surgery by work on dogs. Until then, a penetrating wound of the brain was universally fatal. The technic became so perfected that a scant 15% of the men thus wounded died in the war just finished. Similarly with abdominal wounds—in the Civil War 100% of the soldiers with bullet wounds in the abdomen died. Then a research man shot 30 anesthetized dogs through the bowels.

"From this experiment he showed that it is possible to suture severed intestines under the circumstances of war just as in civilian practice. The fact that only one in five men thus injured in the second World War died of their wounds can be traced at least in part to this experiment.—*Norman Kirk,* Surgeon General U. S. Army, in *Hygeia.*

All Medical Progress Stems from Animal Experimentations

"To enumerate all medical progress that traces directly to animal experimentation is impossible—for the reason that virtually every medical advance roots from such work. Vitamins could never have been discovered without animal work. A few puppies starved of vitamin D led to the discovery that this vitamin prevents rickets in children. Millions of children have straight legs and strong backs because of this work.

"The method of removing a diseased kidney was worked out on dogs before it was tried on man; and so was the procedure for removing portions of the stomach—as is done in the case of gastric ulcers. It cost the lives of 24 cats to develop the iron lung. If the price seems high look in some day at the infantile paralysis ward of a children's hospital. See the faces of children who are alive only because of the iron lung, and remember the look on those faces the next time an antivivisectionist goes into his routine.

"Surgical asepsis would never have been discovered but for animal experimentation, nor would most of the anesthetics which make surgery painless both for man and animals.—*Norman Kirk,* Surgeon General, U. S. Army, in *Hygeia.*

83rd Annual Meeting of the A.V.M.A.

(Continued from the November Issue, page 384)

Cattle Practice

In a discussion of "The application of sanitary science in the control of livestock diseases," Dr. Ralph L. West, State Veterinarian of Minnesota gave concisely four requisites for the successful control of communicable diseases of domestic animals. They are:

1. Ability to diagnose the disease promptly and accurately, either by physical examination or technical test.

2. Knowledge of the causative agent; whether it is a micro-organism, filterable virus, protozoan or other agent; its susceptibility to disinfectant procedures; its longevity after being shed from the body of the host; the species of animals which it infects or which are capable of harboring it and whether or not it is pathogenic to man.

3. Knowledge of the means of transmission; how the causative agent is eliminated from the infected animal and how it enters the body of susceptible animals and whether an intermediate host is necessary for its propagation.

4. It is necessary also to know the extent to which the disease exists in the area or territory where control is to be established.

Control measures, however, vary with the character of the disease, its prevalence and the nature of the causative agent. These measures include:

1. Restrictions in the introduction of diseased or exposed animals and infected materials, including biological products containing living organisms capable of producing disease.

2. Quarantine of premises where infected or exposed animals are maintained, such quarantine to prevent the removal of any animal or article which may convey contagion, except under supervision of the control agency.

3. Destruction and proper disposal of diseased and exposed animals.

4. Cleaning and disinfection of premises after the diseased animals have recovered or have been properly disposed of.

5. Artificial immunization of susceptible animals.

All of the control measures above listed, applicable to the particular disease concerned, should be employed if possible.

Anaplasmosis was discussed by Dr. Leo J. Poelmo and associates. An outbreak in Maryland in 1945 affected a large number of animals the mortality being 12%. Various treatments were tried. An organic arsenic compound known commercially as "clorarsen" gave the most satisfactory results. Surviving animals, however, remained carriers despite prolonged injections of clorarsen. Sulfanilamide, sulfathiazole, sulfapyridine and silver oxide likewise were ineffective against the carrier phase.

The value of colostrum in calf raising was discussed by T. S. Sutton. The difficulty of raising calves without a start on colostrum has long been recognized yet throughout the nation tons of this highly nutritious food are wasted annually. Colostrum is extremely rich in globulin which is similar to if not identical to blood globulin—the all important protein fraction that contains the protective antibodies. Recent investigations have shown that the blood of the newborn calf is strikingly low in gamma globulin. After the calf ingests colostrum the blood globulin rises sharply.

The newborn calf has practically no vitamin A reserves. Colostrum is rich in this vitamin and the calf's store of it rises quickly following the feeding of colostrum.

"When the colostrum not fed to the newborn calf is saved and used to replace whole milk or skim milk in the raising of calves several advantages have been noted: (1) The level of vitamin A in the blood of the calves is maintained at a higher level; (2) the calves make better gains; and (3) the physical appearance of the calves is noticeably superior.

"Contrary to popular opinion, feeding colostrum does not cause looseness or scours. We have changed abruptly from the feeding of whole milk to the feeding of colostrum without experiencing the slightest trouble.

"When calves have digestive disturbances the amount of vitamin A in the blood rapidly falls. This probably results from both an increase in the requirement and a failure to absorb vitamin A from the digestive tract. The administration of vitamin A at such times is indicated. A favorable response, however, does not necessarily justify the conclusion that a deficiency of the vitamin was the primary cause of the trouble."

Pet Animal Practice

Dr. Wayne Riser discussed surgical removal of the mammary glands of the bitch based upon his experience in the surgical treatment of 123 cases of mammary neoplasm.

New growths are common in the mammary glands of aged bitches but rare in spayed bitches. Many of these tumors are malignant and the possibility of metastasis should be kept in mind. In such cases caution demands removal of the adjoining lymph glands also.

The mammary glands are functionally associated with the other reproductive organs and their behavior is definitely influenced by estrus, rendering surgery sometimes inadvisable at that time.

Oophorectomy performed during anestrus causes atrophy of the mammary tissue and lessens the chances of recurrence of neoplastic growths. If the animal be spayed during estrus the operation is followed by long continued lactation which favors recurrence of the tumors.

Geriatrics in canine practice was the subject of a discussion by Dr. Gerry B. Schnelle. The principal ailments of aged dogs are those of the heart and lungs and arthritis, chronic nephritis, vitamin deficiencies and endocrine disturbances.

Dentistry and surgery require special precautions. Anesthesia should be given with the greatest care and stop short of loss of reflex in a hind leg when the toes are pinched. Pentobarbital sodium is the anesthetic of choice. Inadequacy of proteins can be made up by injection of amino acids; blood transfusion and fluids are especially indicated; loss of blood can be minimized by use of proper instruments; alveoli in infected mouths may be packed with sulfathiazole advantageously and the use of penicillin may avoid the loss of life. Pluri-vitamin tablets in adequate dosage seem the most feasible in the treatment of clinical and sub-clinical vitamin deficiencies of aged dogs.

There is no better method of euthanasia than the endovenous or if necessary the intraperitoneal injection of double strength pentobarbital sodium.

The treatment of ear diseases in dogs should be approached differently, according to Dr. D. E. Decamp. Treatment is most effective in the early stages when the ailment is a simple irritation and these stages are detected only by routine, periodical examination of earflaps and of the external auditory canal. Clients should be educated to this end.

Tissue changes in otorrhea are comparable to surgical wounds and should be treated as such—gently and continuously. Hospitalization is desirable.

Ether is the agent of choice for cleaning ears, with oils constituting a second string. Harsh dry applications should be avoided and cotton pledgets on applicators should be soft, not tightly wound.

The surgical condition occurring most frequently is hematoma. General anesthesia is desirable for operative relief.

The unthrifty dog is prone to suffer from otorrhea. Treatment to bolster its general health — improved nutrition, anthelmintic measures, etc.—should be invoked in addition to local treatment of the ear.

"Summary.—Examine ears frequently—particularly 'floppy-ear' type. Treat in earliest stages of change, handle as surgical wound. Hospitalize as for the care of any surgical wound. Improve animal's general health as an aid to ear improvement."

"The actual measures necessary to the control of rabies are known. It is the manner of organization and maintenance of the program that require attention," was the essence of a discussion of rabies control by Dr. Alexander Zeissig. In this country there are two important vectors of rabies, the dog and the fox. No steps can be taken to control the disease in either of these species without encountering opposition of groups or individuals. To date this opposition has resulted in nothing being done for the control of rabies, other than local or temporizing measures. Rabies control is a problem of human relations and recent experience in New York state leads the author to believe that if attention is paid to this all-important field the disease can be controlled not only locally but nationally.

"There are two weapons which are useful to combat rabies: (1) dog control and (2) mass vaccination. These must be applied over an area sufficiently large that a dog with furious rabies will run his course with little chance of transmitting the disease to others. We feel that from this standpoint, a county is of about the right size for a control program.

"In order to put these two control measures into effect on a county-wide basis, it is necessary to do two things. (1) Make all the people in the area aware of the nature of rabies and understand the necessity for the control measures advocated and (2) secure the confidence of the average person in the motives prompting the measures advocated. This involves a planned educational program and, in general, cannot be done by any single individual or group. If, however, there is created for the

county a council on which are representatives of the various groups concerned there seems to be little difficulty in accomplishing the objective. This council sponsors the educational program and the two control measures for its area. Our experience would indicate that this scheme is very effective in putting these control measures into operation.

"On the state level, we have been chiefly

Two weapons useful in rabies control are dog control and vaccination

concerned with strategy. Since this disease occurs both in dogs and wild life and since, further, domestic animals are infected, our board of strategy has consisted of the three departments of state government involved. The Health Department is charged by law with the control of this disease. The Department of Agriculture and Markets is responsible for dog control, while the Conservation Department is in charge of the fox. We have stimulated interest in the organization of counties threatened with this disease. In the course of this work, we have learned new ideas and technics which we have carried to other areas. To help finance the mass vaccination program, state funds have been made available to pay for half the cost. Throughout, we have acted in an advisory capacity only. Each county runs its own show.

"We have made a beginning in the national control of this disease by the mutual efforts of adjoining states. Up to the present, we have merely been exchanging information every month on the location of the disease. This interstate relationship could be enlarged to include exchange of ideas about control procedures and technics. There would be no attempt to alter the controlling agency. Such a step might require a longer time than would be necessary to control the disease. If this procedure were continued in a similar spirit by some national agency functioning in the nation as we have been in New York State, there is no doubt that rabies could be controlled.

Mucoid Enteritis of Rabbits

This disease is commonly referred to as "bloat" by rabbit producers. Clinical symptoms usually are: The rabbits refuse food, grind their teeth apparently in pain, often drink large quantities of water, constipation is frequently noted, although some cases show a severe diarrhea, especially in the younger animals. Copious amounts of a jelly-like mucus may be passed. Eyes may become squinted and dull in color. Adult rabbits frequently die suddenly without visible symptoms.

Post-mortem examination usually reveals the stomach distended either with water or large quantities of feed. The mucous membrane of the stomach is usually covered with heavy mucus. Hemorrhages may be found in intestinal walls, especially in the cecum and that portion of the intestine which is wrinkled and thick walled. In some cases, long heavy strings of this jelly-like mucus are found throughout the large intestine.

The following treatment is suggested for both junior and adult rabbits: Remove af-

To prevent bloat feed rabbits fresh greens daily and reduce water intake

fected rabbits from hutches to small enclosed grass plot for exercise and to procure fresh green feed. Reduce water intake to one-half of normal for three days by giving in limited amounts or for limited periods. As the condition of affected rabbits improves feed small amounts of good alfalfa hay, increasing daily. Do not overfeed. Keep the animals slightly hungry. If improvement is continuous place them back on a normal diet after 10 days. A higher percentage of recoveries is possible if treatment is undertaken early in the progress of the disease.

As a preventative for "bloat" it is suggested that rabbits be given a daily feeding of fresh greens in amounts sufficient to produce moist but well shaped droppings.

Mucoid enteritis and intestinal coccidiosis are frequently associated even though there is no apparent relationship between the two diseases.—Los Angeles County Live Stock Department and Los Angeles Wildlife Disease Research Station.

Penicillin Mastics in the Treatment of Chronic Streptococcic Mastitis*

By C. S. BRYAN**
East Lansing, Michigan

A SURVEY of the recent literature indicates that penicillin has a definite place in the chemotherapy of streptococcic mastitis; especially in that caused by *Streptococcus agalactiae*. When infected animals, without marked physical changes in the udder, are treated with either an aqueous or an oil solution the various investigators[1,3,4,5,6,7,8,9] have reported recoveries (become free from the udder infection) in approximately 50 to 90% of the cases. The development of mastics, a new form of administration of penicillin was responsible for undertaking this study.

Mastics†

The mastics used were slender bougies, 1.5 inches long and tapered at both ends. They are made of a water soluble base and medicated with penicillin. They are designed for quick, easy and complete insertion through the teat canal into the teat and milk cisterns of cows, goats or sheep. With a little more difficulty they can also be used for mares. They dissolve in the milk—left in the quarter for that purpose or which accumulates upon secretion, this milk provides a natural menstruum to carry the medication to all parts of the lining of the teat, cistern and large ducts. The medication (3000 units of penicillin) is carried with a minimum of foreign material (0.25 gram) being introduced into the quarter per mastic. They are partly enclosed in a paper sheath which makes it possible to handle and insert the aseptically prepared mastic into the teat without touching it with the fingers. No equipment is required in the use of mastics except material to wash and disinfect the udder thoroughly, especially the tip of the teat. The procedure of using mastics, after the cow has been milked, is presented in Figs. 1, 2 and 3. During the course of this work a total of 16 lots (prepared at different times) of mastics were used. In each case they were freshly supplied to us as needed, and stored in a refrigerator (55° F.) until used.

Fig. 1. a. Remove the mastic from the vial by grasping the protective sheath. b. Insert the exposed end into the teat meatus

Fig. 2. Slide the sheath off mastic and use it (previously untouched part) to push the mastic into the teat as far as possible

Fig. 3. Grasp the end of the teat between the thumb and forefinger; slight pressure will force the mastic out of the streak canal into the teat cistern

Results and Discussion

A total of 82 cows, in nine herds, with chronic streptococcic mastitis infection, as determined by the microscopic test[2], were treated with mastics. The cows were in all stages of lactation, none had marked indurative changes in the udder tissue, and all were in herds operating under fair to good herd management practices. Only two infected cows in these herds were not treated because of the marked tissue changes in their udders; these two were sold for slaughter.

Seventy-six or 92.6% of the 82 cows treated became free from the udder infection upon treatment. The number of treatments required to effect recovery was variable and will be discussed in detail. Six cows or 7.4% of the cases were refractory to the mastic treatment even though it was repeated many times; see Table I. The interval of time between test and treatment was variable and determined by the time available for this project.

The results of testing after treatment indicate, however, that a sample of the secretion in the quarter should not be taken before the third day after treatment in lactating cows; since in some lactating cows, sampled on the first or second day following treatment, negative results were obtained when findings were positive on the third and succeeding days. This

*Journal article No. 835, new series.
†The mastics were supplied through the courtesy of Dr. F. E. Martin of West Chester, Pa.
**Michigan Agricultural Experiment Station, Section of Surgery and Medicine, East Lansing, Mich.

phenomenon is even more pronounced in dry than in lactating cows.

Four or 5.2% of the cows, that became free from udder infection after one treatment and remained negative for periods up to three months, became exposed again and reinfected. Three of the four again became free from udder infection with one mastic treatment was dependent on the time available for this study; thus the intervals were irregular but the exact dates are given. In spite of the long period during which some of the cows were treated, they did become negative and remained free from infection as revealed by subsequent tests.

Since mastics contain 3000 units of penicil-

TABLE I.—SIX COWS WITH CHRONIC STREPTOCOCCIC MASTITIS REMAINED INFECTED DESPITE REPEATED TREATMENTS

	Dates of tests and treatments													
Cow	Feb. 22	Mar. 6	Mar. 12	Mar. 14	Mar. 24	Mar. 27	Apr. 6	Apr. 7	Apr. 11	Apr. 23	Apr. 24	Apr. 25	Apr. 29	May 5
V.H. 600	+	1/q*	+	+	+	1/q	1/q	1/q	+	1/q	1/q	1/q	+	+
V.H. 398	+	1/q	+	1/q	+	1/q	1/q	1/q	+	1/q	1/q	1/q	+	+
	Mar. 12	Mar. 14	Mar. 24	Mar. 27	Apr. 1	Apr. 6	Apr. 7	Apr. 11	Apr. 23	Apr. 24	Apr. 25	Apr. 29	May 5	
V.H. 747	+	1/q	+	1/q	+	1/q	1/q	sample broken	1/q	1/q	1/q	+	+	
V.H. 645	+	1/q	+	1/q	+	1/q	1/q	+	1/q	1/q	1/q	+	+	
V.H. 800	+	1/q	+	1/q	+	1/q	1/q	+	1/q	1/q	1/q	+	+	
	Mar. 24	Mar. 27	Apr. 1	Apr. 6	Apr. 7	Apr. 11	Apr. 23	Apr. 24	Apr. 25	Apr. 29	May 3	May 5		
V.H. 697	+	P.sol.**	+	P.sol.	P.sol.	+	1/q	1/q	1/q	1/q	+	+		

*1/q means one mastic per quarter.
**P. solution means that 25,000 units of penicillin were given per quarter in 30cc of sterile water.

while the fourth cow required longer treatment. She was given one mastic per quarter on each of two successive days 10 days after the previous treatment. Repeated testings since then have been negative in all four of these cows.

An additional 37 cows or 48.8% of the 76 infected cows treated required but one treatment with mastics to effect recovery from the chronic streptococcic mastitis. These cows have remained free from infection to date, eight months, as determined by frequent testings.

The 35 cows remaining, 46% of the whole number treated, required repeated treatments to effect recovery. Fourteen of the cows were given one mastic per quarter on two successive days. Eleven of these cows became free from the udder infection while three remained infected. Two of the three were given one mastic per quarter for three successive days and the third was given one mastic per quarter for four successive days; all three cows became free from Streptococcus infection and have remained so to date—three months. Three of the 35 infected cows were started on treatment by administering one mastic per quarter on each of three successive days. Two recovered while the third required a second series of three treatments on successive days to effect recovery.

The data on the other 18 cows of the 35 that required repeated treatment to effect recovery are presented in Table II. As indicated previously the time of treatments and tests

lin each and some veterinarians wish to administer more penicillin, which can be obtained by using more mastics, studies were conducted to determine the effect of administering many mastics per quarter. As many as 30 mastics (90,000 units of penicillin) per quarter have been administered at one treatment with slight irritation as indicated by a few flakes in the milk. When many mastics are introduced at one time they slide in very easily if a drop of milk is squeezed out from time to time.

Summary

Mastics, a new penicillin medication form, were used to treat 82 cows with chronic streptococcic mastitis in nine herds. None of these cows had any marked indurations of their udders. Seventy-six or 92.6% of the cows treated became free from the streptococcic udder infection while six of the 82 cows or 7.4% remained infected despite repeated treatment.

Of the 76 that recovered following treatment four or 5.2% required one treatment, but were again exposed and became reinfected, 37 of the cows or 48.8% of the 76 cows needed but one treatment and have remained free of infection to date—eight months—while the remaining 35 cows or 46% of the 76 cows received repeated treatment to effect recovery. Three of the reinfected cows recovered following one mastic treatment while the fourth required two mastic treatments on successive days 10 days after one mastic had been applied but failed to effect recovery after reinfection.

*+Means infected. **1/q means 1 mastic into each quarter on the day indicated. †...Means free of Streptococcus.

TABLE II.—THE RESULTS OF TREATING 18 COWS REPEATEDLY, AT INTERVALS, BEFORE BECOMING FREE OF STREPTOCOCCUS INFECTION

Cow	Dates of tests and treatments																		
	Dec. 20	Dec. 27	Jan. 2	Jan. 5	Jan. 9	Jan. 21	Jan. 31	Feb. 8	Feb. 22	Mar. 6	Mar. 12	Mar. 14	Mar. 24	Mar. 27	Apr. 1	Apr. 6 & 7	Apr. 11	May	June	July	Aug.
V.H. 769	+*	1/q**	+	1/q	+	1/q	+	1/q	+	1/q	+	1/q	1/q	1/q	+	1/q	...†	...	...	...	...
V.H. 653	+	1/q	+	1/q	+	1/q	+	1/q	+	1/q	+	1/q	...	...							
	Jan. 21	Jan. 29	Jan. 31	Feb. 3	Feb. 7	Feb. 10	Feb. 14	Mar. 1	Mar. 1, 4 PM Mar. 1, 8 PM			Mar. 2 8 AM	Mar. 13	Apr.	Apr.	May	June	July	Aug.		
Spen. 7	+	1/q	+	1/q	+	2/q	+	+		1/q		1/q	...	...	...	...	...	...	...		
Spen. 14	+	1/q	+	1/q	+	2/q	...	...					...	...	...	...	...	...	...		
Spen. 53	+	1/q	+	1/q	+	2/q	+	+		1/q		1/q	+		Mar. 19 20-21	Apr. 1	Apr. 8-9 10-11-12	Jn.	Jl.	Aug.	
															1/q morn. & eve.	+	1/q morn. & eve. for 5 days				
	Jan. 29	Feb. 2	Feb. 7	Feb. 9	Feb. 12	Feb. 22	Feb. 25	Mar. 11	Apr.	May	June	July	Aug.								
Kah A35968	+	1/q	+	1/q	...	...	...	...	...	...	...	...	...								
Kah 803	+	1/q	1/q	1/q	dry, fresh	...	...	...	...	...	...	...	...								
Kah 317	+	1/q	+	1/q	+	1/q	...	...	...	...	...	...	...								
Kah 182	+	1/q	+	1/q	...	...	...	...	...	...	...	...	...								
Kah 158	+	1/q	+	1/q	2/q	...	...	...	...	...	...	...	...								
	Feb. 2	Feb. 7	Feb. 8	Feb. 12	Feb. 22	Feb. 25	Mar. 11	Apr.	May	June	July	Aug.									
Kah 35993	+	1/q	+	2/q	...	...	...	...	...	...	...	...									
	Feb. 12	Feb. 23	Mar. 2	Mar. 9 & 10 1 PM	AM PM	Mar. 18	Apr.	May	June	July	Aug.										
Kell 124	+	1/q	+	1/q	1/q	...	...	...	...	...	...										
Kell 156	+	1/q	+	1/q	1/q	...	...	...	...	...	...										
	Feb. 22	Mar. 6	Mar. 12	Mar. 24	Mar. 27																
V.H. 652	+	1/q	+	1/q	...	...	...	...	...	...	...										
	Mar. 12	Mar. 24	Mar. 27	Apr. 6	Apr. 7	Apr. 11	May	June	July	Aug.											
V.H. 669	+	1/q	+	1/q	1/q	...	...	...	...	...											
V.H. 799	+	1/q	+	1/q	1/q	...	...	...	...	...											
V.H. 344919	+	1/q	+	1/q	1/q	...	...	...	...	...											
	Mar. 24	Mar. 27	Apr. 6	Apr. 7	Apr. 11	Apr. 23	Apr. 24	Apr. 25	Apr. 29	May	June	July	Aug.								
V.H. 521	+	1/q	1/q	1/q	+	1/q	1/q	1/q	...	...	...	...	...								

*+Means infected. **1/q means 1 mastic into each quarter on the day indicated. †...Means free of Streptococcus.

The number of treatments necessary to effect recovery in the 35 cows requiring repeated treatments were variable. Fourteen of these were given one mastic per quarter on two successive days and 11 became free of udder infection while three remained infected. Two of these three cows were then given one mastic per quarter on each of the three successive days and the third was given one mastic per quarter, per day for four days to effect recovery. Of three of the infected cows started on treatment by giving one mastic per quarter on three successive days prior to test, two recovered while the 3rd was given a second series of three treatments over three days to effect recovery. The remaining 18 became free of the streptococcic mastitis after repeated treatment; the number of treatments necessary were variable.

Literature Cited

1. Barker, C. A. V. Observations on the use of penicillin in the treatment of bovine mastitis. *Canad. J. Comp. Med. & Vet. Sci.*, 9:9, pp. 235-243. 1945.

2. Bryan, C. S., W. L. Mallmann and G. J. Turney. Some microscopic technics for determining the bacteriological quality of milk. Mich. Agr. Exp. Sta. Cir. Bul. 186. 1944.

3. Bryan, C. S., R. E. Horwood and C. F. Huffman. A preliminary report on penicillin in the treatment of chronic streptococcic mastitis. *Vet. Med.*, 40:3, pp. 87-89. 1945.

4. Kakavas, J. C. Penicillin the treatment of bovine mastitis. *North Am. Vet.*, 25:7, pp. 408-412. 1944.

5. Murnane, D. A preliminary report on the treatment of clinical and subclinical Streptococcus and Staphylococcus infections of the bovine udder with penicillin. *Australian Vet. J.*, 21:4, pp. 82-90. 1945.

6. Murphy, J. M., and K. Q. Pfau. The value of local injections of penicillin sodium in the treatment of *Streptococcus agalactiae* infection and mastitis in cows. *Cor. Vet.*, 35:2, pp. 87-102. 1945.

7. Slanetz, L. W., and F. E. Allen. Treatment of bovine mastitis with penicillin. *J.A.V.M.A.*, 107: 820, pp. 18-20. 1945.

8. Schalm, O. W. Recommendations for the use of penicillin in the treatment of bovine mastitis. Univ. of Calif. mimeograph, 3 pages. 1945.

9. Schofield, Frank W. Penicillin in the treatment of mastitis. *Canad. J. Comp. Med. & Vet. Sci.*, 10:3, pp. 63-70. 1946.

Brahmans to Be Used in Dairy Cattle Experiment

The arrival of two young Brahman bulls and two heifers at the Beltsville, Md., dairy experiment station marks the start of a long-time breeding experiment which will be undertaken by the U. S. Department of Agriculture to develop better dairy cattle for southern climatic conditions. The cattle, which were imported from Guam, are outstanding representatives of the Red Sindhi breed. They represent one of the most popular dairy breeds among the many breeds of humped cattle in India.

In general appearance and characteristics the Red Sindhi is similar to all other breeds of Brahman cattle—having the typical hump, drooping ears, and heavy dewlap. The cows have better developed udders, however, than the beef and draft breeds that have made up most of the previous importations to the United States. The color varies from deep cherry red to fawn and mouse gray or brown, with some white on the face and dewlap.

This will be the first experimental attempt in the United States to use an improved dairy strain of Indian cattle to combine the Brahman qualities of resistance to heat, pests, and drought with the dairy qualities of our domestic dairy cattle. Considerable evidence exists to indicate that crossing this breed with the Jersey breed may aid in developing a more desirable dairy animal for the tropical and subtropical areas. Other breeds of Brahman cattle have been imported and crossed with American beef breeds and range cattle in the Coastal Plain area of Texas and Louisiana for nearly a century to obtain a hardy, fast-growing type of beef animal for this area. Experimental work and practical experience seem to indicate that Jerseys have more heat tolerance than other dairy breeds, which may account for their predominance in the South. Crosses with Jersey bulls and purebred Red Sindhi cows have been made at the Allahabad Institute in India for more than 14 years, with apparently favorable results.

The four imported animals arrived at Beltsville in good condition, despite the long and tedious journey from their native country. Their transportation was accomplished successfully through the excellent cooperation of the War and Navy Departments, as well as that of various other Government agencies. The cattle left Allahabad early in February for Calcutta where, after being quarantined and certified free of disease by U. S. Army veterinarians, they were shipped to the Island of Guam. On Guam they were again in quarantine and under the care and supervision of Army veterinarians for almost six months. They reached Norfolk, Va., on August 28, 1946, and were flown immediately by cargo plane to the quarantine station of the Bureau of Animal Industry at Clifton, N. J., for a further quarantine period of 30 days. They arrived at Beltsville more than seven months after leaving India.

The bulls will be mated to the heifers of their own breed and also to females in the Jersey herd at Beltsville.

New Treatment for Bovine Stomatitis

By J. E. Mosier*
Manhattan, Kansas

LATE in August and the first part of September, 1946, a peculiar and rather characteristic stomatitis appeared in several herds of cattle grazing on native pastures in the vicinity of Manhattan, Kansas. The lesions and symptoms of this condition were identical to those of reported cases occurring in various sections of Kansas and Nebraska. The treatment practiced by the veterinarians varied, as did their results. Some practitioners used alum, others used sodium sulfapyridine, others used tonics, stimulants, antiseptic mouth washes, etc.

When it became apparent that the condition was becoming quite common, an attempt was made to find a drug or a group of drugs that would be of the most therapeutic value. On the theory that it might be due to an allergy, it was decided to use a drug of antiallergic properties. In view of the recent literature in Medical Journals[1-2], benadryl was chosen as the most likely drug. Benadryl[2] (Parke Davis) has the chemical name of beta-dimethylaminoethyl benzhydryl ether hydrochloride. It is made up in 50mg capsules or in the form of an elixir with 10mg per 4cc and acts as an antihistamine agent with antiallergic and antispasmodic properties. Thus far the results have been highly successful, consequently the purpose of this report. The following is a survey of the cases treated with benadryl as to history, symptoms, dosage and results of treatment.

History and Symptoms.—The animals were from herds that had been grazing on native pasture all summer. Usually not more than one to three animals from a single herd were affected. The affected animals developed scabs on the nose, showed excessive salivation, anorexia, ulcerations of the oral mucosa and a slight elevation in temperature. Occasionally an animal exhibited stiffness in the hind quarters and lameness. The nostrils and mouth were highly sensitive, and the slightest pressure would cause extreme pain to the animal, making it difficult to administer any type of medication *per os.*

Dostage.—The dose of benadryl used in the first four cases was 120mg *per os* three times daily for two days. In the next three cases a dose of 300mg was given twice a day for two days. The remainder of the cases, all of which were treated in the field, were administered 50mg per 100 pounds body weight, once daily. In only one case did the treatment extend over more than two days.

Results.—Of the four cases treated at the Kansas State Veterinary Clinic with benadryl, three animals were eating 72 hours after starting the treatment. In all four cases the scabs on the nose and the sensitivity around the nose and mouth disappeared within 72 hours after starting the treatment. The one case in which the appetite did not respond immediately had been completely off feed for a week before benadryl treatment was instituted. She gradually regained her appetite, however.

The remainder of the cases (13 in all) were treated in the field through the cooperation of Dr. Frank Jones, of Leigh, Nebraska, and two senior veterinary students.**

Dr. Frank Jones summarizes his results as follows: "In eight mild cases in which the animals were noticed to be off feed, very gaunt and drooling saliva, I found the mucous membranes of the mouth to be red and very tender to any manipulation. Treatment consisted of one does of benadryl (50mg per 100 pounds). All animals, including five additional cases which were quite severe, recovered promptly. The mucous membranes were dark (almost bluish black) and the lips, muzzle, and nostrils were very sore and tender. The breath was very offensive. The dose of benadryl was repeated three times in the most severe case. In others it was administered one or two times depending upon the severity of the case.

"I have not been able to follow up these cases as I would like to have done and part of my statements are what I got from the owners, but I am sure they are as near the facts as is necessary to satisfy me that my results from the use of benadryl in the treatment of stomatitis in cattle have been 100% satisfactory.

"Before I started using benadryl I had five severe cases. I used various kinds of antiseptic treatment, penicillin on two of them, bisuldex on two of them, but the rendering plant got all five of them.

"During my 36 years in practice I have had a few of this sort of cases of stomatitis almost every year, but never so many, and never any cases that were so severe as some of those that I encountered this year."

*Department of Surgery and Medicine, Kansas State College.

[1] McElin, T. W., and Horton, T. Clinical observation on the use of benadryl, a new antihistamine substance. *Proc. Staff Meeting,* Mayo Clinic.

[2] A new Parke Davis & Co. product (Benadryl). *Therapeutic Notes,* July and August, 1946.

**C. K. Jewell and Lloyd Jones. During the inter-semester these students worked with Dr. Jones and they told him of our preliminary results with benadryl.

Conclusions.—In view of the results obtained, the treatment of nonspecific stomatitis of cattle with benadryl is highly encouraging. There is a great deal of work that remains to be done in regard to the etiology of this condition, the dosage of benadryl and the frequency of dosage. The administration of benadryl apparently relieves the hypersensitivity of the mouth as well as the irritation causing the scabs and ulcers. In most cases the ulcers heal without incident and require no additional treatments, but in some cases the treatment of the ulcers with antiseptics may hasten the complete recovery.

The ABC's of Animal Nutrition*

The maximum rates of growth or other productive performance in birds and animals are limited by the inherited genetic characteristics. The first fundamental in the economical production of livestock and of animal products is the careful selection of the birds and animals to be fed.

The food requirements of an animal may be met only (a) when all the various *food nutrients* (proteins, fats, carbohydrates, minerals, vitamins and water) needed to enable the animal to perform in the expected manner are present, and (b) when all the daily ration has the *physical characteristics*, especially with respect to bulk, texture, and particle size, most suitable to the size, capacity, and nature of the gastrointestinal tract of the animal fed.

The food nutrients consumed by an animal may serve one or more of three functions: (a) as fuel or energy; (b) as structural units in the products produced, for example, calcium and protein in bones, milk and egg, etc.; and (c) regulatory functions (many of the mineral elements and all of the vitamins serve only in this capacity). Further, the functions served by the regulatory elements are more specific and there is little, if any, substitution possible among them.

The food nutrient requirements of an animal are the sum of those required to maintain the animal in a state of vigorous health *plus* those needed for the manufacture of the products produced.

The total amount of food required per day for maintenance *increases* as the size of an animal *increases*, although the amount of food required for maintenance is *relatively* greater for the small animal than for the large one.

The kinds and amounts of food nutrients required for the productive performances of an animal *are determined* by the chemical composition and the amounts of the product which the animal produces.

The gains in weight of an animal change markedly in composition as the animal matures. The gains put on by a young animal are high in water, protein, and calcium and low in fat, while the gains put on by a mature or nearly mature animal are high in fat and low in water, protein, and calcium.

The greater the rates of productive performances in an animal, the higher must be the quality of protein and the higher must be the concentrations of the structural and regulatory elements in the ration if the animal's requirements are to be fully satisfied.

Young animals voluntarily eat more food *per unit* of live weight than do older ones; a species of small animals voluntarily eats more per kilogram body weight than does a species of larger animals.

The digestibility of the nutrients of a ration decreases as the quantity of ration eaten increases; also the digestibility of the proteins of a ration decreases as the percentage of fiber in the ration increases.

A mixture of two or more proteins usually are more efficiently used than either alone.

Except for the composition of the gains in weight, which may be affected to some extent, the basic composition of animal products is determined to a greater extent by the age and genetic characteristics of the bird or animal producing the product than by the amounts and kinds of nutrients fed.

Certain food nutrients consumed in excess of the animal's requirements may be deposited in the products produced; but while these somewhat enriched products may be of higher nutritive value to another animal subsequently consuming them, the feeding of an excess of any dietary essential has little, if any, beneficial effect upon either the rate and quantity of product produced or upon the health of the animal fed.

The synthetic abilities of the microorganisms in the paunch of ruminants make it unnecessary (a) to include any of the water-soluble vitamins in the ration and (b) to feed high-quality protein except when the animal's requirements exceed about 12% protein.

The most exact chemical analysis of a feed indicates the maximum amount of each food essential that the feed can supply, but it gives no information concerning the amount of each that an animal *will utilize* from the feed.

No one natural feed, by-product, or commercial concentrate can be substituted in its entirety for any other food, by-product, or commercial concentrate.

*Notes from an address at the 22nd annual Short Course for Veterinarians, University of Minnesota, by T. S. Hamilton, Professor of Animal Nutrition, Department of Animal Husbandry, College of Agriculture, University of Illinois.

Can Racing Really Be Cleaned Up?

By FRANCIS J. CARNIGLIA
Windsor Locks, Conn.

MUCH progress has been made in the current year to help make the sport of kings fit for its subjects. The major tracks have set the pace in introducing innovations, which are intended to safeguard the wagering public. These progressive steps have included the formation of a Thoroughbred Racing and Protective Bureau, supervised by Spencer Drayton, a former member of the Federal Bureau of Investigation. This organization has as its aim the uncovering of any element, factor, influence, or practice detrimental to racing and the patronizing public. Also mentioned on the agenda of improvements is the employment of the receiving barn, more intensive use of the saliva and/or urine test and any other test of merit, research and discussion of new advances in pharmacology and toxicology, prohibiting the administration of any drug within 48 hours of post time, unless the animal's health is in jeopardy, in which case the stewards must be notified and, finally, the severity of penalties incurred due to infractions of the racing rules have been increased to such an extent that any form of connivery by owner, trainer, jockey or other element is in itself a big gamble. Using the mouse test for drug detection, the filming of races, lip tatooing for practically fool proof horse identification, and the close surveillance of the stable area will all tend to discourage subversive activities. All these aggregates are going to have varying degrees of proficiency in preventing the evils at which they are directed; however, I believe the major problem confronting racing today is the stimulation and depression of thoroughbreds during racing competition. This article discusses some of the technical problems confronting the eradication of these practises.

Encouraging the utilization of a receiving barn will offer another handicap for the unscrupulous. This procedure consists of the isolation of those horses entered to run, in a designated policed area a minimum of one and one-half hours prior to post time. This barn will act as a deterrent to certain forms of tampering such as chaining or electrical shocking. It will also check the practise of applying irritant rubefacients such as ginger, oil of mustard, turpentine, etc., to the more sensitive areas of the thoroughbred's external anatomy. It will decrease the value of externally applied leg freezes on sore horses with only minor degrees of lameness and thus eliminate that stratagem. The receiving barn alone, however, will not prevent the stimulation or depression of horses. Stimulants and depressants can be given in thick walled enteric coated gelatin capsules, so constructed as to break in an allotted time, or they may be administered hypodermically (intramuscularly) suspended in oily vehicles to prevent a too rapid absorption, in which case the drug is slowly absorbed until at a given time its threshold value in the blood has a stimulant or depressant effect. The act of blocking sore horses to effect their best effort will not suffer to any appreciable extent because of this barn, for the anesthetic agents used to accomplish this end can be made to prolong their action. Then one must consider the alcohol block which can be done days before racing. The same applies to the nerved horse. An instrument capable of detecting these isolated cases of form reversals has been introduced. It probably detects such tampered-with animals by recording changes of electrical potentials in nerve fibers. The receiving barn will also fail to prevent the more subtle forms of stimulation accomplished by the use of endocrine products. This period of isolation will offer one good advantage. It will make available a span of time during which each entrant may be closely examined prior to racing. The receiving barn is not intended to relieve the owner and/or trainer of any responsibility associated with the horse. It will offer him protection against tampering by other elements.

A more extensive application of the saliva and urine tests has been advocated, it being suggested that the saliva and/or urine be taken from any horse finishing first and any other horse in the race whose performance is far above or far below his previous form. Both these tests are employed for drug detection. The saliva is not a very good medium from which to isolate drugs for its detective abilities can be nullified easily, in several ways. First, if the stimulant or depressant is

given as an oral drench, a neutralizing mouth wash can be applied to dilute and eradicate any traces of the drug. Secondly the drug may be given in a gelatin capsule thus preventing contamination of the oral cavity with any residual drug. Third and most proficient in obliterating the value of the saliva test is the use of the hypodermic syringe. No agent introduced into the body hypodermically is excreted in the saliva unless it be given in a dosage far greater than that amount required to produce the desired result. The same would be true also when small doses of potent drugs are given orally in gelatin capsules. Thus it can be concluded that as a reservoir of excreted drugs the saliva has an ebb value. The urine analysis is a far better technic for detecting drugs than the saliva test, for regardless of the method of administration any agent given a horse to encourage or discourage his speed must produce its effects by absorption into the blood stream which conveys the drug to the various nerve centers, where the drug action is interpreted.

One characteristic any stimulant or depressant must have to be effective, is the property of being refractive to rapid destruction within the body, thus because it has no threshold value in the blood and cannot be quickly metabolized to any appreciable extent, it is handled as a low threshold substance (waste product) by the blood which spills this exogenous product over into the urinary basin, the easiest and fastest channel of elimination, in the form in which the drug was administered or conjugated with some physiological detoxicant. Conjugated end products can be broken down easily into their component parts by acid hydrolysis and thus facilitate their isolation and subsequent identification. Drugs may also be excreted in the feces and the sweat; however, their concentration here never approximates the urinary values. In addition feces contain so much organic debris that it would hinder extraction procedures. The perspiration wouldn't be of any value for it has too much of a variable factor quantitatively. Therefore we can assume that at the present the urine is one of the best media from which to isolate drugs. Although the urine test is a far better means of detecting drugging than is the saliva test it is not without its weaknesses as we shall see in the discussion of the use of hormones. However its shortcomings are theoretically remediable.

One could advance a postulate here concerning the probability of a newer more proficient test employing residues obtained from blood plasma samples, these residues to be drawn up into a given quantity of sterile water for injection into laboratory animals or to be subjected to spectroanalysis in an electric colorimeter with subsequent plotting against a standard curve obtained with normal plasma residues or extracts. The use of blood as a medium in which to detect drugs is neither illogical or impracticable. It makes sense when one considers the urinary concentration of any refractive drug is directly proportional to the concentration of that drug in the blood stream—and any refractive drug which is administered orally or parenterally must eventually arrive in the urine via blood filtration in the glomeruli of the renal parenchyma. The taking of blood samples would be comparatively easy and would involve no injury to the horse. One could expect to find that although the blood is the source from whence drugs are excreted into the urine, the concentration of drug volume for volume would be greater in the urine for, whereas the blood stream is carrying the agent, the dilution factor must be considered. Thus we would have a dilution factor in the blood and a concentration factor in the urine; however, according to the literature the concentration of certain drugs is high enough in the plasma to register galvanometric defections on the colorimeter, when plotted against a normal curve. One outstanding advantage of the blood plasma test, would be its property of being adaptable to use before the horses race. The test could be made in the receiving barn. Samples of blood could be drawn, centrifuged extracted and/or distilled and examined spectroanalytically or by injection into test animals. Detection of stimulation or depression before a horse is allowed to race would really discourage these two objectives.

The use of endocrine products to influence the thoroughbred's morale cannot be overlooked. Such preparations as testosterone propionate, hormones of the adrenal cortex, thyroid, adrenaline, etc., have an influencing tendency on the horse the degree of which is dependent on the animal's personality. The problem of detection here is complicated by the fact that endocrine products are physiological agents, not foreign to the animal body and thus susceptible to a large measure of metabolization. Take for example the hormone testosterone, claimed to be one of the most powerful physiological tonics in the endocrine field. It has a pronounced effect on geldings producing a sense of well being and courageousness which endures for some time. The detection of such a hormone would probably be best accomplished by obtaining the urinary androgen and estrogen excretion in normal studs, geldings, fillies and mares ac-

cording to age groups. Androgen excretion is most pronounced in the stallion. Geldings excrete a lesser amount. Both excrete small amounts of estrogen; however, the gelding's urine has a much higher estrogen level than the stallion's. Thus we have a androgen-estrogen ratio in the male of the species. Fillies and mares in turn excrete the hormonal metabolite estrogen, but also excrete a small amount of androgen so again we have a ratio, which can be of great value as will be shown later. Once standard values have been obtained and considered as normals, here's how the test could proceed. Samples of urine taken from geldings showing sudden winning form could be assayed for their androgen-estrogen content. If testosterone had been administered the androgen excretion values would be comparatively higher with a correlated decrease in estrogen excretion than the previously determined standards. Confirmative tests could include a comparison of the creatinine coefficient and nitrogen excretion in normal geldings against the values obtained from our unknowns. The creatinine coefficient is directly proportional to the muscular mass of the body and testosterone will encourage nitrogen retention and the hypertrophy of skeletal muscle to influence this coefficient. Each finding is then used synergistically to arrive at a final conclusion. Testosterone will increase the androgen excretion in any sex and the female gonadotropins will increase estrogen excretion in any sex. Here is a logically workable plan to prevent the employment of this hormone in geldings. The obtaining of estrogen levels in fillies and mares and the determination of the estrogen-androgen ratio in normal subjects of this sex would serve a dual purpose. Fillies and mares do not run to their best form during their estral period. This is especially evident in the spring in most horses; however, it is a constant handicap to the filly or mare with nymphomaniacal tendencies. Consistent fillies and mares who suddenly stale off and become sulky might better have their urine assayed for estrogen for during these estral periods estrogen excretion is increased. Such an animal should be barred from competition until these symptoms subside. Conversely a filly or mare showing sudden improvement should also have her estrogen-androgen ratio determined and compared to normal values of the sex and if such a horse shows a high androgen excretion one could assume such agents were used to abort the heat period. If testosterone were used alone or in conjunction with other glandular therapy to erase the estrus, a double barrelled effect is obtained—that is abortion of the estrus plus psychic stimulation. Here again is a theoretically workable plan which would serve to eliminate these unknown quantities.

A consideration of the hormones of the adrenal cortex exposes another weak link in the urine analysis as it is presently being conducted. These hormones are powerful physiological substances having the power of producing psychic stimulation. Here are a group of steroids, which have many regulating influences upon the animal such as, preventing fatigue by maintaining a physiologically perfect blood sugar level, settling a horse by equilibrating his blood electrolytic balance, thus preventing washiness in the paddock, which in itself is a handicap to a nervous horse and a menace to his immediate physical well being for excessive sweating means an increased loss of high threshold substances such as albumen and globulin from the blood. These two blood proteins in turn are involved in the buffering mechanism. Some authorities claim that loss of condition can result from excessive secretion of these two blood proteins occurring as a result of hyperidrosis. Other threshold elements which are lost extensively in hyperidrosis include the vitamins and minerals. Vitamins, especially the water soluble group, have a catalytic effect on carbohydrate metabolism, a deficiency resulting in a stagnation of intermediate sugar metabolism resulting in the excessive accumulation of these metabolites in the blood to produce fatigue. The loss of minerals effects the fluid balance of the body by their influence on the osmotic pressures within the animal. These hormones prevent an animal from reaching the limits of its physical endurance by supplying elements which catalyze and accelerate biological phenomena occurring in the severely exercised body, thus it increases endurance and stamina by preventing the formation of metabolites, the presence of which in the blood to any excess allows the animal to perceive fatigue. The intensity of cortical hormonal therapy can be exaggerated by the concurrent administration of salt. The usual procedure involved in the employment of these agents probably consists of several days of parenteral therapy. Cessation of dosage can occur the day the horse is entered to run, with a deep intramuscular injection several hours prior to post time, hence, the offender does not have to tamper with a horse too near race time, at which period stable surveillance is much greater. Most preparations of the cortical hormones available commercially are water soluble extracts obtained from beef adrenals. They are biologically

standardized in dog units but not as to their steroid content; hence, different lots may have different potencies which, however, never decrease below the slated unit assay. There now has appeared in the literature a newer type of cortical preparation derived from the procine adrenal gland and suspended in oil. It has a potency far greater than the original beef gland extracts and in addition its crystalline components have been standardized to contain known amounts of the various steroids. Further by being suspended in an oily base it will offer the manipulator a more flexible time limit which will offset the value of stable surveillance. The use of these agents in bolstering the thoroughbred's morale certainly constitutes a man taking his best "hold" and as such it must be prevented. One of the possible ways of accomplishing this would be a collection of steroid estimations obtained from normal horse urines with regards to their age and sex. The steroid which would be most important to evaluate should be 17-ketosteroid. The logic of selecting this particular steroid arising from the observation that this resultant metabolite of cortical metabolism is the one estimated in the laboratory as an index of cortical function. A low 17-ketosteroid urinary excretion points to an adrenal insufficiency meaning a cortical hypofunction. Thus one could logically assume a high 17-ketosteroid excretion to indicate a cortical hyperfunction. This latter observation would occur in the case of a horse given these cortical hormones for, when such is done, these agents are metabolized to a great extent with the excess steroids being excreted in the urine. Again coordinating tests should substantiate the 17-ketosteroid value. Such tests should include the creatinine coefficient but, more important, the urinary sodium and potassium values should be determined for this group of hormones has factors in it, which cause a sodium retention but encourage potassium excretion, therefore, they would produce urines with low sodium values but high potassium levels. All these tests then could be used synergistically to form an interlocking pattern which when fitted together would yield a definite answer.

Thyroid is another endocrine product adaptable for use on thoroughbreds especially those of a phlegmatic temperament. The thyroid gland incidentally undergoes evolution as a two-year-old turns three, and assumes a more prominent role in regulating its behavior. The thyroid gland is involved in endurance and stamina. It produces coordination, encourages physical activity and dexterity by unleashing energy previously only potential in a "numb horse." It will accelerate the pace at which he is living and, if given in too high a dosage over a considerable period, it will make him "rank." Here again is an unknown factor the use of which must also be prevented. One practical means of preventing the use of thyroid might be the determination of blood cholesterol values in normal animals and their subsequent use for comparison against unknowns.

A discussion of adrenaline brings us into a field which is going to offer technical problems to the racing chemist. Here we encounter the sympathomimetic amines. The exploitation of this group of drugs is forming the nucleus of the development of new synthetic tailor-made molecules which will have a broad field of application as analeptics and decongestants. The basic structure of this category of drugs is the aromatic benzene ring with variations occuring on the ring and/or the aliphatic side chain being responsible for individual personalities. A skeletal classification of the amines which would be of interest to the analytical chemist could be set down as follows: Phenylethylamine and its related derivatives such as amphetamine (benzedrine) ephedrine, propadrine, and desoxyephedrine (methylated amphetamine); monohydroxyphenylethylamines represented by paredrine and synephrin, and dihydroxyphenylethylamines exemplified by epinephrine (adrenaline).

These three groups will encompass any amine likely to be used as a stimulant. It is unlikely that newer members of the sympathomimetic group will be found whose potency will exceed that evident in the phenylethyl amine derivatives. Because this latter group comprises the most efficient analeptics we will analyze their behavior first by commencing with amphetamine. The conclusions to be set forth being derived from observations and conclusions made by Beyer[1] in his research on the sympathomimetic amines as an etiological factor in hypertension. Most of his experimentation was done on the human subject, the dog, and *in vitro* in the laboratory. Assuming amphetamine is given to a horse to encourage his performance—let's say he received a 150mg dosage. If such were the case he could be expected to excrete about 1/50 of this base dosage on micturating after cooling out. The amount of amine excreted increases with the water intake and the volume of urine passed. Let's say the horse passed 1000cc of urine—thus we would have 3mg (3000 micrograms) in 1000cc of urine or three micrograms in each cc. This represents a value

five times greater than the amount needed for detection when Beyer's[2] test for amphetamine is employed.

It might be well to digress here a moment concerning the tests available for amine detection. Beyer's test is a specific reaction designed to detect only amphetamine. It consists of an absorption procedure to facilitate the removal of all organic debris and interfering substances which might be present in urine. Absorption is then followed by amine extraction using organic solvents. Residues are obtained by subsequent evaporation of the solvents and these residues are then taken up into a given volume of water, caused to react then with a *diazonium* compound to produce color which in turn is quantitatively interpreted with a colorimeter. Beyer's technic is capable of detecting concentrations of amphetamine as low as ½ microgram per cc. Thus we have a test capable of detecting the use of this amine. The use of Richter's[3] test to detect amphetamine should be discarded if it still is in use, for Richter's test is not specific for any one group of amines and will give normal horse urine an amine content which automatically diminishes the proficiency of this test for physiological elements can be introduced into the body which will decrease the urinary amine content and thus produce a variable factor that could be utilized to beat the test, thus amphetamine could have been given without causing the urinary amine content to rise appreciably.

Although means are available to prevent the use of amphetamine one must consider several other related facts. First, the excretion of amphetamine can be influenced in several ways. Beyer[4] has shown that amphetamine excretion can be diminished 66% in dogs by the concurrent administration of a physiological detoxicant. Research in the study of amines as the etiological cause of hypertension has brought to light other systems capable of suppressing amine excretion by catalyzing deaminization within the body. Here one must consider the possibilities of application of this knowledge to defeat the test. Amphetamine is an agent which is not completely excreted in the dosage in which it was given. It is slowly excreted and slowly metabolized within the body. One would think that the introduction of physiological detoxicants would cause the rapid destruction of amphetamine in the blood and thus decrease the analeptic powers of this amine to one of only transitory value. But the use of deamination might produce something of the following nature: Destruction of amine fast enough to prevent excessive excretion into the urinary basin yet slow enough to allow for analepsis. This would be especially true if the stimulant were administered in a fashion designed for slow absorption from a constant source of supply. The answer to such a challenge again lies in assaying the urine for those elements which are known to have an influence on the deaminating powers of the body and comparison to known values obtained from normal horses. Thus a borderline reaction could be made to fall into a tell-tale category. Another theoretical means of detecting those cases of stimulation applied with a scientific background could be an analysis of the blood plasma even before the horses run. Such samples could be centrifuged, exposed to an absorption technic, subjected to amine extraction, evaporation of the extracts to obtain a residue which can be used one of two ways. It may be drawn up into a given amount of sterile water and injected into a test animal or the residue may be caused to unite with a color producing compound. The intensity of the color formed being an index to the quantitative amount of amphetamine present and being estimated by comparing this curve to a curve obtained with normal plasma by use of the electric colorimeter. One could obtain his own curve and then formulate an equation which when worked out will express the concentration of amine in micrograms per cubic centimeter of plasma. Regardless of the methods used to prevent the detection of amphetamine the blood must have a threshold value of amine to produce stimulation — so although amphetamine is constantly being deaminated *in vivo* it must be supplemented by a constant source of supply. I believe that the amount of amphetamine circulating in the blood would be capable of causing galvanometric deflections on the electric colorimeter when plotted against a normal curve.

The use of the plasma as a medium from which to isolate drugs has many advantages over the urine test. The collection of urine samples involves many factors which might influence the integrity of the test. The urine collector can be told the horse he has been sent after is vicious, will not urinate unless the doors are closed, etc. Subsequently the individual associated with the horse ends up taking the urine sample, but the urine he hands to the collector might have originated from a bottle hidden over in the corner under the straw. Then there's the possibility of ringing a horse for a urine test. This is accomplished by substituting a normal horse similar in appearance to the horse in question just as the latter is cooling out. The

probability of this occurring cannot be overlooked, especially during the fall meets when darkness is setting in about the time the last few races are run. The use of the plasma test will eliminate these possible avenues of trickery.

The use of ephedrine as a stimulant is futile as far as beating the test is concerned, for ephedrine is a secondary amine having a hydroxyl group on the *alpha* carbon atom which, in addition to the presence of the amino group on the *beta* carbon atom, makes it exceedingly refractive to destruction within the body; hence, ephedrine appears in the urine to a quantitative extent almost as great as the base dosage given and is therefore easily picked up. Amphetamine lacks this refractive hydroxyl group and is therefore deaminated to an appreciable extent and thus is harder to detect quantitatively. The structural formula of propadrine also indicates easy detection for although it is a primary amine it contains the refractive hydroxyl group on the *alpha* carbon of the aliphatic side chain.

This brings us to the discussion of a comparatively new sympathomimetic agent, d-desoxyephedrine or methylated amphetamine. Here is an amine having twice the analeptic powers of racemic amphetamine and yet liable to a degree of deaminization in the body as great as the racemic nonmethylated form. Methylated amphetamine is a secondary amine containing a methyl molecule on the amino group. It will produce cerebral stimulation in doses only one-half as great as racemic amphetamine. Although d-desoxyephedrine differs from racemic amphetamine in having a methylated amino group it is not adaptable to detection by Beyer's test, for being a secondary amine, it cannot complete tautomerization to produce color—hence, if no color is produced no interpretation can be made. Richter's test is adaptable to detecting this amine, but again this test involves nonspecific reactions, which offer alterable factors. There is, however, a combination of tests available for the detection of this secondary amine in the urine. By using the absorption-extraction procedure described by Beyer for amphetamine and then subjecting the extracted amine to Richter's procedure and finally estimating the concentration of the extracted amine by comparing the unknown solutions of amine picrate (yellow) to known solutions of amine picrate colorimetrically. A matching of the colors indicates the concentration of amine in the unknown. If physiological deaminators are employed to suppress the excretion of this amine this could best be detected by a urinary assay again or by the blood plasma test. A study of the structural formula of d-desoxyephedrine indicates that it is as susceptible to deaminization as amphetamine for the presence of a methyl molecule on the amino group does not appreciably decrease deaminization according to Beyer's observations.

In closing our survey of this group it might be well to mention something about isomers, especially dextro amphetamine. This isomer of amphetamine has twice the analeptic power of racemic amphetamine. It can produce analeptic responses equal to those produced by the racemic form in dosages only one-half as great. Its excretion can also be suppressed by increasing the deaminating powers of the animal. Efficient detection of this isomer could be obtained by increasing the aliquot of urine and subsequent urinary assay for specific detoxicants. The blood plasma test would also be applicable. Dextro amphetamine on passage through the body cannot be distinguished optically from the racemic form. In other words, one can detect amphetamine easily enough, but he cannot determine, by spectroanalysis of the urine, what optical form was given.

This brings us to an evaluation of the monohydrox-phenylethylamines represented by paredrine and synephrin. Amines in this group have a central stimulant activity but not of the intensity of the previous classification. They are destroyed rapidly, in the body by deaminization, and thus have but a transitory effect on the animal, and appear in the urine as normal metabolites. There is a means of detecting the unscrupulous use of these amines which it is unnecessary to describe as they are not efficient stimulants.

The dihydroxyphenylethylamines include the amine adrenaline. Levoadrenaline possesses a fair degree of stimulant value but again it is only transitory in nature for it is deaminated rapidly, in the body. If this amine is given in oil in an attempt to obtain sustained action the following test could be applied for detection. Although adrenaline is destroyed in the body and doesn't appear as such in the urine it sends a proxy there which, when detected, could indicate a positive finding. Adrenaline is destroyed in the body by amine oxidase. Amine oxidase in turn is responsible for the normal amine content of urine. When adrenaline is administered the amine oxidase of the body is mobilized to destroy it; hence, normal amine metabolism is neglected with a resultant high amine content in the urine. This finding coupled with

the behavior of the animal in the paddock would offer a means of recognizing the use of adrenaline. Horses, that are given this agent continuously at the same site of injection, exhibit a sparse growth of hair in the immediate area, probably as a result of the intense vasoconstriction produced by this amine.

Summarizing our conclusions it becomes evident that, at present, the procedure of greatest efficiency in detecting drugs is urine. The blood plasma test could be made to be of equal or greater value than the urine analysis. A word might be added here in respect to the mouse test as presently being done. It consists of obtaining a residue from a saliva sample. This residue is then mixed with a volume of sterile water and injected into a mouse. Suffice to say the test has about as many shortcomings as the original saliva test and is just about as efficient. Residues obtained from the urine or plasma injected into animals for biological testing would be of far greater value, if the technical difficulties complicating this technic were ironed out. If the test becomes adaptable for use, it will surpass the urine analysis in the field of drug detection. Even the urine test at its best has many loopholes. The smart operator or some one behind him could take advantage of these avenues of escape. Detective procedures as they are done today can still be beat. More must be done to close off these channels of escape. Research is necessary, research tuned to stay abreast of current medical progress in the field of pharmacology. The importance of this statement can be shown by recalling the amine d-desoxyphedrine. A specific test for this agent has yet to appear in the literature. Richter's test can be applied as a means of detection but high amine values can be obtained in this test with quite legitimate reasons given as alibis. Thus the nonspecifity of the reaction outlaws employment of the test. D-desoxyephedrine being a secondary amine will not produce color with the diazonium compound so this test in itself is not capable of doing the job. A combination of these tests as described earlier in the article will do the job very efficiently. Incidentally this amine is now available commercially; hence, the analytical chemist should look for it.

Another laboratory procedure which deserves more attention is the application of the technic described in the literature to detect local anesthetics such as procaine etc., in the urine. This same idea needs more application concerning the detection of other elements—both organic and inorganic—that are adaptable for use on the race horse such as amides, tetrazols, arsenic, cobalt, etc. The use of depresants and their subsequent detection requires more study. There are roughly two groups of barbiturates when one classifies them according to the duration of their action. We have the long acting barbiturates, characterized by the straight carbon chain. This group is not readily metabolized in the body and appears in the urine in detectable amounts. The short acting barbiturates are composed of a structural forked formula and are readily detoxicated by the liver and therefore excretion is improbable; hence, the possibility of detection is minimized. The use of the latter group is a menace to clean racing.

The answer to these problems of stimulation and depression could be materially aided by the following:

1. Complete assay of the normal constituents of urine and the establishment of these figures as comparative values.

2. The analysis of urine for substances capable of suppressing drug excretion.

3. Taking composite samples of urine by catheterization if necessary. Might be well to remember that drug excretion, as a rule, is not at its maximum when the conventional urine sample is taken.

4. Research on the possibility of using residues obtained from the urine or plasma for injection into mice or, better still, the subjection, prior to racing, of these residues to colorimetric analysis.

5. Constant study of experimental pharmacology so that detective methods are available when any new synthetic agent is introduced commercially. At present there are two analeptics in the developmental stage which deserve some attention.

It is surprising to realize the extent to which such knowledge reaches the race track. The only way to fight well informed quarters is with a technical skill equally as progressive and intelligent. Yes, racing really can be cleaned up but much effort has to be directed into the means of accomplishing it.

References

1. Beyer and Morrison, *Indust. and Chem. Engineer.* Vol. 37, p. 143, Feb. 1945.
2. Beyer and Skinner, *Jour. Pharm. and Exp. Ther.* Vol. 68, 1940.
3. Richter, *Bio-Chemical Jour.* Vol. 32, No. 2, 1938.
4. Beyer, *Jour. Pharm. and Exp. Ther.* Vol. 76-77, 1942-1943.

Treatment of Traumatic Lesions of Tendo-Achilles by Joint Fixation with Stader Splint

By LOUIS N. GLEESON, M.D.V. (Bern), M.R.C.V.S.
Waterford, Ireland

Case 1.—A greyhound pup, aged six months, caught a hind limb in a door. The tendo-Achilles, about one inch above the os calsis, was subjected to a crushing or "Burdizzo-like" action between the door and door-jam. The skin was not sectioned, and the dog did not bear weight upon the leg for two days following the accident, after which time when he placed it upon the ground the tendon stretched out, something after the manner of a roll of soft chewing gum when the ends are pulled in opposite directions; a thin part consisting of peritendineum only, remaining as a communication between the crushed ends. Excessive flexion of the tarsus existed, the animal practically walking on his entire metatarsus.

Treatment.—Using Novutox for nerve block and local infiltration anesthesia, the tendo-Achilles was cut down upon. The intervening overstretched portion of peritendineum was sectioned proximally and by means of tarsal extension the crushed ends were brought into apposition. The opposing ends were very carefully freshened with a razor blade, being sectioned in an oblique manner in order to obtain the largest possible contacting surfaces. A mattress fixation suture of 20-day catgut was used for the main opposing surfaces. The free loose portion of peritendineum about one inch long, now hanging loosely from the distal newly-stitched end of tendon, was in turn stitched into the posterior aspect of the proximal part of the tendon, the latter being scraped before attachment. In the latter part of the operation lighter gut was used. A large figure-of-eight relaxation suture completed the work upon the tendo-Achilles. The skin incision was closed with interrupted sutures. Local anesthesia was now renewed and the upper pin-bar assembly of a Stader Utility Splint was fixed with half-pins to the lower lateral extremity of the tibia, the distal half-pin being inserted just above the outer malleolus. The lower pin-bar assembly having been inserted in a piece of shaped hardwood was attached to the previously padded antro-lateral metatarsus, upper extremity, by means of a plaster bandage. A little time was allowed for the lower pin assembly to harden into position. Slight relaxation of the tendo-Achilles was practiced by the assistant, and the extension bar assemblage applied to the pin assemblies. Adjustments were made so that the joint was maintained in extended position, thus immobilizing the repaired tendon. The projecting pins were cut off close to the pin-bars. A rubber stockinette was applied over the instrument, being held above and below with flexoplast. A speedy daily dressing of the wound was carried out, using sulfanilamide in ether. The animal was kept muzzled for the first few days, but as he made no attempt to interfere with the apparatus, the muzzle was removed.

Results.—Four weeks later, the wound having healed, and the tendon feeling quite firm and thickened at the site of union, the extension bar assemblage was lengthened, thus relaxing the slight over-extension of the joint. The animal cheerfully romped around in the manner of greyhound pups and used the limb. At five weeks the bar was further extended placing a little tension on the tendon in the manner of joint flexion. At seven weeks the pins were extracted, and the animal returned home; directions being given to dress the pin sites. Three months later, the animal was seen and apart from a decreasing thickness of the tendon, he was normal upon the limb. On account of the youth of the subject, it is believed that 100% success is assured.

Case 2.—A greyhound bitch, aged 14 months, received, by accident, a stroke of a scythe which completely severed the tendo-Achilles. The case was received in fresh condition. It was necessary to very slightly shorten the tendon in order to obtain the large oblique presenting surfaces for union. Twenty-day gut was used for the fixation and relaxation sutures. No antiseptic was used on the wound, the latter being irrigated with saline solution. The oblique accidental skin wound was closely sutured. The Stader Splint was applied as in Case 1. One hour after suturing the skin wound 20,000 units of penicillin was administered, some of the injection being given in the neighborhood of the wound. Similar dosage and procedure was carried out every eight hours until 100,000 units had been used. Sub-

sequent procedure consisted of daily raising of the stockinette and dressing the wound with sulfanilamide in ether.

Results.—After six weeks the extension bar was lengthened as in Case 1 with a further extension adjustment at seven weeks and total removal of the apparatus at eight weeks. Some slight interim plaster bandage attention was necessary to the plaster-incorporated pin-assembly of the metatarsal extremity and, due to the latter attention, movement did not occur. Three months after operation it was obvious that 95% successful result had been obtained.

Before using the above Stader Splint procedure in such cases, the writer favored application of the closed plaster method following tendon repairs. Due to plaster deterioration it was necessary to renew the cast about every eight or ten days. The usual closed plaster stench existed in these cases but healing was not interfered with. Four to six renewals of plaster were necessary before the tendon was fit to bear weight. Disadvantages of the method included the frequent renewals, bad odor, incomplete immobilization, inability to attain first intention healing. Despite the above, however, the writer has had good results, especially in pups.

Advantages of the Stader fixation method include, definite immobilization of the joint with consequent relaxation of the tendon in the healing stage. Facilities for antisepsis and rapid wound repair are afforded by this method. Occasionally, in the closed plaster method, adhesion of the skin to the repaired tendon occurs; this disadvantage has not been observed in Stader fixation.

In conclusion it may be stated that the writer is unaware that the above application of the Stader splint has hitherto been described, and it is hoped that the procedure may be of value to others.

An Inexpensive Warming Bottle for the Dog or Cat

On extra cold nights, or in the spring and fall days when fires are scarcely needed for the well and thrifty a warming bottle may fill the need felt for heat by the housepet or patient in the small animal hospital. Have on hand several earthenware bottles, quarts, half-gallons, or gallons, the size depending on the space to be heated. Take one part sodium acetate and nine parts sodium hyposulfite. Fill a jug about three-fourths full of the mixture and close with a cork. Set the jug in the oven or in a water bath until the salts melt. It is now ready for use and can be placed in the pet's bed. It will radiate heat for a day and a half, but if it seems to cool down it needs only to be shaken to renew the heat giving action.—*L. R. Palmer.*

Protection of Animal Experimentation

Our efforts toward prevention and control of infantile paralysis would be hopeless except for the use of some species of monkeys and rodents in detecting and following the poliomyelitis virus. And yet the Antivivisection League of Los Angeles publicly proclaims that "it does not support the March of Dimes campaign."

There were more than thirty years of intensive research on animals—mainly on the dog—before we had the substance insulin in sufficient purity to warrant its trial on persons sick with diabetes.

The lowly mouse, not to mention many other species, has served man well in research on cancer. Animal experimentation has been a great factor also in giving us better knowledge and control of anemia, digestive and kidney disorders, glandular disturbances, nervous diseases, hookworm, scurvy, pellagra and malaria.—*Anton J. Carlson in J. Am. Med. Assn.*, May 4, 1946.

Prevent Dry Rot

Be on the lookout for dry rot and avoid trouble. The name dry rot seems like a misnomer as it is anything but dry. Also it may seem unnecessary to concern ourselves about it when methods are in use commercially for combatting it. But despite these things it is something to be concerned about as hardly anything except a fire or an earthquake can be more destructive to a building, and yet it does its work quietly and usually unseen until it is too late.

Fungi and certain bacterial growth get a start in lumber and make a steady advance through the entire piece if conditions are favorable. Proper ventilation will prevent dry rot getting a start and may retard its development after it is already started, but more effective means may be necessary. Kerosene is a good agent to use and may be painted on the damaged parts. It will kill the fungi and after a few days they drop off. Ordinary salt is another good remedy and also a good preventive. Make a saturated solution of salt and wash the wood repeatedly with it. And another good method where practicable is to place the salt on the wood directly. Salt is highly hygroscopic and will absorb the moisture of the wood while it in turn is dissolved and will soak into the wood thus impregnating it.—*L. R. Palmer.*

Verminous Pneumonia in Dogs and Cats*

By LOUIS L. VINE
Chapel Hill, N. C.

IN my practice I have been confronted often with dogs presenting pneumonic symptoms. As a rule they show a severe dyspnea, a mucopurulent nasal discharge, a cough, puffing out of the cheeks with each breath and a normal temperature. This absence of hyperthermia indicates a cause of the pneumonitis, to be other than microörganisms.

Diarrhea is also present in these cases; the feces being dark, tarry and containing mucus and blood spots as evidence of intestinal hemorrhage. On microscopic examination of the feces, a large number of hookworm eggs are present signifying a heavy infestation of *Ancylostoma caninum.*

The conjunctival and buccal mucous membranes are extremely pale; evidence of anemia. Being blood suckers, the hookworms cause this anemia by depleting the body of hemoglobin. The animal is usually emaciated and cachectic, signifying that it has been in a poor state of health for days—even weeks—as the disease is progressive. In severe cases, edema of the lungs and hydrothorax may be present, associated with cardiac insufficiency, and in these cases a dry cough is not infrequently present. Dyspnea is one of the most characteristic symptoms of verminous pneumonia with a normal or slightly above temperature. If a secondary bacterial invasion takes place in the weakened lung tissue, lobar pneumonia may ensue.

Upon further examination the animal shows a congestion of the lungs combined with severe pains in the thoracic walls. General apathy is evident. There is also an excessive dilation of the thorax. Respiration is extremely fast (80 to 100) and superficial. The pulse is accelerated. The chest is super-resonant on percussion and moist rales can be heard on auscultation. A characteristic feature of the blood is a marked eosinophilia, due to the infestation by an intestinal parasite.

In less severe infestation only a cough may be observed. Upon ridding the animal of its intestinal parasites, the cough will disappear, if the worms were the sole cause of it.

Upon reviewing the life cycle and pathogenesis of *Ancylostoma caninum,* we find that the larvae enter the blood stream from the intestinal tract or *via* the skin. In the blood the larvae are carried *via* the heart and pulmonary circulation to the lungs. Here the majority become arrested in the capillaries from which they pass to the alveoli, and later up the respiratory passages to the pharynx and down to the intestine again. They increase in size during the migration through the tissues. Some larvae may pass through the pulmonary capillaries and reach the systemic circulation. They are then carried to various organs in which they cause small hemorrhages and later die. In a pregnant animal, they may reach the fetus and establish prenatal infection.

The most important organs involved during this period of transit are the lungs through which all larvae apparently must pass in order to develop into adult worms. The diameter of these larvae in transit from the pulmonary capillaries to the terminal air spaces is considerably greater than that of the capillaries.

Even when a few larvae are escaping from the blood vessels into the alveoli, some trauma and petechial hemorrhage occurs. In animals in which a heavy infestation is developing, the multiple damage to the pulmonary tissue is considerable. Some pools of blood may accumulate in the alveoli and smaller bronchioles and edema of the organ may develop. Furthermore, the presence of the larvae in the terminal air spaces provokes a local infiltration and thus a serous exudate forms which plugs up the air spaces and produces a consolidation of the lobules involved.

Stongyloides stercoralis, an intestinal parasite of man, has been shown to infest dogs also, and in transit through the lungs the young worms may be responsible for symptoms simulating bronchopneumonia. The adult worms lodge in the bronchial epithelium and may produce a chronic bronchial disease.

On post-mortem examination, anemia and cachexia are conspicuous. In the lungs, varying degrees of pneumonia or bronchitis may be found, or only a number of petechial hemorrhages. The larvae may be found by pressing small bits of lung tissue between two slides and examining under a low magnification or by teasing up portions of the organ in warm saline. Small or necrotic foci may also be seen in other organs.

*Presented at the Central North Carolina Veterinary Association, February 13, 1946.

Regarding treatment of dogs affected with this pneumonitis, I first attempt to improve the general condition of the animal and relieve the respiratory distress. Once this is accomplished, the animal will be able to withstand the anthelmintic treatment necessary to recovery.

As a cardiac and respiratory stimulant, I use ethereal camphorated oil with guaiacol injected intramuscularly. I also apply a counter irritant ointment to the chest walls and then cover with a pneumonia jacket. For the respiratory exudates I use iodides as an expectorant. When the nasal discharge is thick and tenacious, I also use ammonium chloride and terpin hydrate. This is also indicated when a cough is present. To combat the anemia invariably present I use hepatic extract hypodermically and vitamin B and iron tablets orally. If the diarrhea is very profuse, I use a bismuth and kaolin preparation which combats the enteritis. When blood appears in the stools, ceanothin is added to the bismuth preparation to stop the intestinal hemorrhage.

The temperature is carefully checked and, at first signs of a rise, penicillin or sulfadiazine is added to the dog's medication.

The animal will usually continue to eat during the disease until the congestion in the lungs become very apparent and causes pain at each inspiration and expiration. However, with alleviation of these symptoms, the animal's appetite becomes as voracious as ever.

Once improvement is shown and some strength regained, I give the animal a small dose of normal butyl chloride to combat the hookworms. I repeat this dose at weekly intervals as may be indicated by examination of the feces.

Cats also are susceptible to this infection, showing the same symptoms and responding in similar fashion to treatment. However, the roundworm *Toxascaris leonina* is more often responsible for feline verminous pneumonitis than is the hookworm. Some authors claim that *Toxocara canis* infestation is more often responsible than hookworms for the pneumonia in dogs. However, in the South, hookworms are more prevalent and so are more frequently the cause of the trouble.

Recently, an owner of eight foxhounds came to the hospital for help. He said that his dogs, varying in age from three months to seven years of age, were all coming down with "Distemper." His youngest dogs, two three-months-old pups, started with coughs gradually showing difficulty in breathing. His older dogs showed the same signs only much milder. All the dogs had been eating except the two young ones. They had refused food for several days. After a complete examination of all the dogs a diagnosis of verminous pneumonia was made and treatment started. One of the puppies succumbed, the other seven dogs recovered successfully.

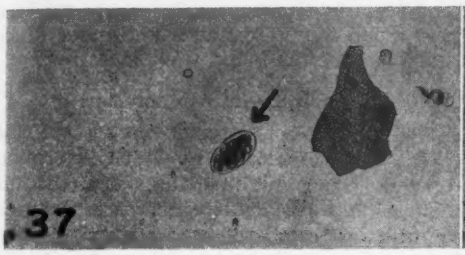


Fig. 37. Egg of Ancylostoma caninum, a hookworm of the dog. x 100.—Benbrook

Fig. 38. Same as Fig. 37. x 400.—Benbrook

This case history confirms the findings of G. F. Otto and K. B. Kerr of Johns Hopkins University, who found that the phenomenon of actively acquired immunity operated in the host-parasite relationship of the canine host and the hookworm *Ancylostoma caninum*. This is apparently by far the most important natural means of host protection. In old or mature dogs, in single or multiple infections, the animal typically goes through a crisis and becomes immune. If the infection is too heavy the animal dies before becoming immune. The juvenile host of the parasite, debilitated by dietary deficiencies or disease entities, is unable to respond as fully or as quickly to immunological stimuli as is the mature, healthy animal. This suggests that the mature animal is better able to withstand the pathogenic effects, particularly the blood sucking activity, of the worms by rapid regeneration of blood elements.

Conclusion

Intestinal parasites, hookworms and roundworms, as well as microörganisms can be the etiological factor in pneumonia of dogs and cats and that maturity and good health are essential for the host to respond fully and quickly to the immunological stimulus of the invading parasites.

Influence of Estrus on Susceptibility to Brucellosis*

By Alberto A. Ascoli**
New Brunswick, New Jersey

IN an earlier publication† the object of this investigation and the method of conducting it were given. It was noted in the course of the experiment that female albino rats are far more susceptible to *Brucella abortus* than male rats. Accordingly some observations were made to determine if this susceptibility varied at different stages of the estrus cycle. Such variation if it occurs and if it occurs also in cows might have a bearing on the immunization of the latter animal and hence on measures designed to prevent or control bovine brucellosis.

A few attempts, to study the effect of estrus on susceptibility to brucellosis, by using virgin female rats which were given estrogen, proved inconclusive. To my knowledge, no experimental data is available which demonstrates that resistance to infections undergoes any change during the estrus cycle of rats. Its possible influence on the susceptibility has not yet been investigated either on rats or mice, which are the laboratory animals available for this purpose. Autopsies of female rats, protected and unprotected, that had been inoculated intraperitoneally with a M.L.D. of Brucella seemed to give some support to the assumption that the stage of the estrus cycle has some influence on the resistance namely that estrus favors the survival of infected female rats. In order to verify directly a possible fluctuation in the susceptibility of female albino rats to intraperitoneal administration of Brucella, an experiment was set up on two groups of three females each. Their estrus cycles were followed by making daily smears from the vaginal secretion, which was collected by means of small droppers of the type in current use for bacterial staining. Taking advantage of the circumstance that at a certain moment the characteristic cornified cells appeared in one rat, indicating it to be in estrus, while the other two were in dioestrus, all three were given intraperitoneally one-third of the M.L.D. of a Brucella suspension for male rats. The two females in dioestrus (weight 229gm and 188gm) died on the second and fourth days, respectively. On autopsy characteristic lesions of brucellosis were found, and bacteriological examination of the blood yielded pure cultures of *Brucella abortus*. The female (weight 180gm) which had been inoculated when in estrus though indisposed for 3-4 days survived, gained 30 grams in 11 days, whereas the other two lost 28gm in two days and 38gm in four days, respectively. The second group was unfortunately disposed of before any rat was found to be in estrus.

Comment and Conclusion

The influence of estrus on the susceptibility to infective organisms would be determined properly by inoculating the pathogens into females in different stages of the estrus cycle, in order to compare their respective resistances. Our experiment on three female rats seems to indicate that estrus increases the resistance to intraperitoneal inoculation of *Brucella abortus*, but of course the number involved is too small to be more than suggestive.

For cattle, unfortunately, no experiments are available which throw any light on possible changes in resistance to infections during the estrus. It is known that pregnant cattle abort when exposed to Brucella infection.[1]

The experiments of Edgington and Donham[2] demonstrate that non-infected pregnant heifers aborted after vaginal administration of virulent *Brucella abortus* given at different stages of gestation ranging from six weeks to five months after conception, while heifers exposed to infection prior to breeding calved normally. These experiments, besides confirming the generally accepted opinion, that non-infected pregnant cows are highly susceptible to brucellosis are interesting mainly because the Brucella were introduced into a female genital organ. From the standpoint of immunology, the administration of vaccines proves more efficient when they are applied locally to the most sensitive tissue.[3] According to Besredka's concept, the chance for success of *Brucella abortus* vaccination would be enhanced if the attenuated organisms were introduced into the uterus. On the other hand, there is a possible indication[4] that the uterus in early pregnancy may not be a favorable culture media for *Brucella abortus* and that non-pregnant cattle carrying virulent *Bru-*

*This paper reports a part of a study on brucellosis which was supported by the Mennen Fund.

**Formerly Research Associate in Animal Pathology, New Jersey Agricultural Experiment Station, and formerly Professor of Animal Pathology, University of Milan, Italy.

†Ascoli, Alberto A. Susceptibility of the female albino rat to intraperitoneal inoculation of *Brucella abortus*. *Vet. Med.*, 41:11, p. 396. 1946.

cella abortus in the uterus may fail to conceive.

***Brucella abortus* introduced into vagina of non-infected pregnant heifers caused abortion but heifers exposed to infection prior to breeding calved normally**[2]

In associating vaccination with artificial insemination — vaccinsemination is the term coined for it—a number of methodical details have yet to be worked out centering attention mainly on the possibility that: (1) the greater efficiency, which might be expected from local application, could be offset by the fact that the uterus at this stage is not likely to be a favorable culture media and (2) the Brucella might affect both the semen and the process of fecundation and implantation of the ovum. Following vaccinsemination a lower rate of conception is expected than through artificial insemination alone. This disadvantage would more than made up for, if abortions at an advanced stage of pregnancy were prevented from occurring, or at least reduced in vaccinseminated cattle.

Summary

In the foregoing work, original experimental results on the susceptibility of the female albino rat to intraperitoneal inoculation of *Brucella abortus* are reported. The post-mortems changes are also described. This is compared with other works on albino rats, mice and guinea pigs where sex, castration and treatment with estrogens influenced the susceptibility of these animals to infectious organisms.

It is suggested that much is yet to be done to determine the difference in susceptibility of the sexes to infectious organisms. The possibility is advanced that experiments on immunization of cows by introducing *Brucella abortus* directly into the uterus (vaccinsemination) during estrus might be attempted.

Bibliography

1. Haring, C. M. and Traum, J. *J.A.V.M.A.*, 98, p. 278. 1941.
2. Edgington, B. H. and Donham, C. R. *J. Agr. Res.*, 59, p. 609. 1939.
3. Besredka, A. Immunisation locale Paris. 1925.
4. Fitch, C. P., Boyd, W. L., Bishop, L. M. and Kelly, M. *Cor. Vet.*, 29, p. 253. 1939.

Nutrition of Animals

The economic law of diminishing returns applies to rates of production in animals. The efficiency with which production is effected decreases with increasing rates of production, disregarding the decrease in digestibility of increased feed consumed.

In general, physical factors rather than chemical ones affect the digestibility of a ration; for example, the quality of the protein in a ration may be unrelated to its digestibility.

All healthy animals with good teeth have all the physical and chemical processes necessary for satisfactory digestion of their rations.

Condiments, laxatives, drugs, or other medicinals and chemicals added to a balanced ration do not increase its nutritive value.

Before any food essential can be used for a specific purpose in the animal body, all other food essentials required for the accomplishment of this specific purpose must also be present.

A ration may be deficient in more than one food essential, but the efficiency with which the ration is utilized is limited by but one factor, that one being the dietary essential farthest from satisfying the animals requirements; and the efficiency of utilization of a ration can be improved by correcting only the first limiting factor. The level of water in a barrel can be raised only after plugging its lowest hole.

For the most efficient utilization of a ration, all nutrients necessary to satisfy all the animal's requirements not only must be present, but they must be present in proper proportions. In other words, the animal must be fed a balanced ration. (A balanced ration is one that contains all the essential food nutrients in sufficient amounts and proportions to maintain the animal in vigorous health and to enable it to produce a satisfactory product at a maximum rate. The ration should not have an excess of any food nutrient, and it should not contain anything harmful to the animal or degrading to the products produced.)

In general, an animal will voluntarily eat more of a well-balanced ration than it will of one less well-balanced.

The more of a deficient ration an animal consumes, the quicker will the animal show the effects of the deficiency and the more severe will be the symptoms of the deficiency.

An animal must eat a ration before it can do him any good; after all, "The eye of the master fattens his cattle."

*Notes from an address of the 22nd annual Short Course for Veterinarians, University of Minnesota, by T. S. Hamilton Professor of Animal Nutrition, Department of Animal Husbandry, College of Agriculture, University of Illinois.

Parasites Causing Deaths in Foxes

By C. K. Gunn*
Summerside, Prince Edward Island

RECENT examination of foxes in Island fox ranches shows there is great need for fox ranchers to check their foxes carefully for parasites.

Parasites lower the resistance of foxes in this Province, to the extent that the majority of deaths that are reported to the Dominion Experimental Fox Ranch are the result of heavy flea and earmite infestation, followed by deaths from other incidental causes that are not affecting the other animals free from parasites in the same fox ranch.

We have found that pneumonia and only moderately virulent pathogens of the food poisoning groups of bacteria can kill a fox, especially an old fox, which has had its resistance lowered by earmite and flea infestations.

The cause of the increase in parasitic infestation may be traced to inefficient flea powders, which have been on the market until recently, and the unusually warm weather.

Any foxes, males or females, which are not eating well or show running nose or pus in their eyes, should be checked carefully for earmite disease.

The first indication of an advanced case of this disease may be a swollen running nose, with pus in the eyes which the rancher may mistake for the symptoms of distemper and become greatly alarmed. Examination of the ears, however, will show massive infestation with earmite and secondary infection with pus formation. The latter has spread down the eustachian canal into the nose and into the eye *via* the naso-lacrimal canal.

Treatment of the earmite disease with one of the several effective remedies on the market, including the prescribed preparation given below will clear up this condition.

Examine the fur at the top of the head and back of the neck for fleas and flea-dirt or manure. If the black particles of flea dirt are present the fox is also infested with fleas.

The remedy is to treat the fox for fleas directly with an effective flea powder and, following this, the den or shed pen should be cleaned and sprayed with fuel oil to prevent the larval form of fleas from persisting beyond the period of treatment and reinfesting the fox.

Earmite Lotion

One part of sublimed iodine, one part of potassium iodide, one part water, mixed with 25 parts of glycerine, has been found quite effective in the control of earmites at the Dominion Experimental Fox Ranch.

Application: With a cotton swab clean out earmites and scabs to get down to the tissues of the ears, then gently apply earmite lotion on a fresh cotton swab, rub gently but thoroughly into the tissues and work the ear from the outside. Clean out the fox pen to remove earmites in the bedding and repeat the treatment of the ears one week later to kill off any earmites that have hatched out of eggs that survived the first treatment.—*Amer. Fur Breeder.*

*Superintendent, Dominion Experimental Fox Ranch, Prince Edward Island, Canada.

Pneumonia in Mink

By T. T. Chaddock
Grafton, Wisconsin

PNEUMONIA is considered, over a long period, to be one of the greatest killers of mink. The disease occurs at all seasons of the year and has been observed to be the most common cause of death in both young and adult mink.

The term "pneumonia" is used to designate a catarrhal inflammation of the air cells of the lungs. If the condition develops unchecked, it is succeeded by infections in other parts of the body.

Causes

Pneumonia is not due to a single cause, but to many predisposing factors which, alone, seem of little importance. Probably in no other disease do lessened powers of resistance of the animal from numerous causes play such an important part as in the development of pneumonia, such as:

1. Neglect and ignorance on the fur farmer's part relative to pen and nest box construction.
2. Cold, damp, changeable weather which chills the surface of the body to such a degree that the circulation is modified, which in turn, reduces the general resistance of the animal.
3. Overheating followed by drenching rain.
4. Other causes (of secondary importance) are: (a) Inhalation of dirt and dust; (b) aspiration of food during force-feeding, and (c) the presence of disease lesions in other parts of the body, such as parasitism and distemper.

Symptoms

The symptoms of pneumonia are not always seen in mink. Death sometimes occurs before they have been observed. The disease is noncontagious and there will be but a few isolated cases on the ranch.

The caretaker may note that several animals did not eat their normal feed or he may find a mink that was on a full feed the evening before, dead in the nest box. These things are quite disturbing and mystifying to the rancher. It is also difficult for some people to understand why the mink, an animal that is found around and near bodies of water and subjected to adverse weather conditions, will die from exposure.

In mild cases of pneumonia, symptoms have been observed that have a systemic sequence. First, the mink is noted to be off feed and likes to remain in the nest box much of the time, or it may drag damp nest hay out into the pen.

As the disease progresses, other symptoms are noted. The animal may weave and stagger around the cage. The respiration is rapid and labored and the heartbeat is accelerated. The animal may be seen to crawl into the watering cup or dish to cool itself, because of an elevated temperature. In some instances a definite chill is noted. In animals that have survived for a few days, a discharge may be present around the nostrils and eyes. These animals also have a rough appearance and do not have the pugnacious spirit characteristic of mink. Coughing may or may not be present. These latter symptoms must not be confused with those of distemper.

Prevention and Treatment

The poorly constructed and poorly ventilated nest box is one of the greatest hazards to the health of mink as oftentimes frost not only forms on the inside of the nest box, but also throughout the nesting. Unless the roof of the nest box allows for the proper circulation of air, the breath of the animal condenses, melts at the first change of weather, and severe exposure results. After each rain, it is advisable to check over the nest box, unless it is known to be waterproof.

On bacteriological culture of the lungs, various organisms such as pneumococci streptococci, staphylococci and Streptothrix are isolated. Diagnosis must be made early or treatment is of little value. Specific serums are beneficial in combating some of the organisms. The sulpha compounds, which have been widely used in the treatment of human pneumonias, are also of value in the treatment of pneumonias in mink.

The affected animal should be kept warm, dry and away from cold drafts. Its resistance should be increased by feeding nourishing food, such as a freshly killed sparrow or a small amount of warm skimmed milk mixed with an egg.

Prognosis

Many cases of pneumonia recover from good nursing. Recovery is closely related to the amount of exposure and the condition of the animal.—*American Fur Breeder.*

Common Ailments of Canaries

By LIEUT. G. VENKATA NARUSU
Gwalior, India

The following are some of the important diseases of canaries:

1. *Constipation.*—This is mainly a disease of dietetic origin. Canaries get this complaint often due to wrong methods of feeding. Generally speaking, their staple diet is the canary seed mixture. But they enjoy a change in diet, such as the yolk of a hard-boiled egg twice a week; green foods, such as cabbage, mustard leaves, lettuce leaves, and also a variety of other seeds, *viz.*, rapeseed, hempseed, poppy seed and linseed. It is always a good plan to hang a piece of cuttle bone in the corner of the cage for the birds to peck, and to spread in the tray at the bottom of the cage, fine sand with a little nicely crushed oyster shell and also small gravel stone. Feeding the birds always the same variety of seed will cause constipation.

The bird appears very dull, and the droppings are hard.

Treatment.—Administer one drop of Ol. Ricini by means of a dropper, in the beak; also add a pinch of magnesium sulfate in drinking water twice.

2. *Coryza.*—Canary birds often suffer from this complaint if exposed to chill weather.

There is a discharge from the nostrils and the bird will begin to shake its head as if to get rid of something.

Treatment.—Clean the mouth and nostrils with potassium permanganate solution 1 to 1000. Keep the bird in a quiet dry place. Put a few drops of honey in the drinking water. Allow as the diet egg yolk to which has been added five drops of Super D cod-liver oil.

3. *Bronchitis.*—This follows generally as a sequel to catarrh.

The canary becomes restless with a husky and dry cough; a sort of rattling noise in the throat is observed. Feathers look ruffled.

Treatment.—Give the following:

Spt. Camphor. Co.....m.i
Tragacanth. .....gr.II
Glycerin. .....m.X
M. Sig. Add to one ounce of drinking water.

If the bird appears better after a couple of days discontinue the foregoing and give:

Tr. Ferri. Chlor. .....m.II
Tr. Gentian Co. .....m.V
M. Sig. add to one ounce of drinking water.

Feed bread moistened with milk and poppy seed sprinkled over it.

4. *Asthma.*—This ailment is caused by neglected chills; overheated aviaries, and lack of proper ventilation. This is differentiated from ordinary bronchitis when there is difficulty in respiration and the canary appears wheezing and panting.

Treatment.—The same as for bronchitis. But add one drop of Tr. aconite or one drop of Tr. lobelia to about an ounce of the drinking water. These two drugs have given successful results. Attend to ventilation.

5. *Fits and Fainting.*—These are observed in canaries when they are accommodated in very small cages, and exposed to the direct rays of the scorching sun, and also when they are frightened.

The canary suddeny falls from the perch with its beak striking against the tray in the cage and becomes very stiff. If not attended to immediately it may die in a few minutes.

Treatment.—Dash ice water against the head and put some of it in its beak. With this simple treatment, the bird generally recovers. Then keep the bird in a very cool, quiet, comfortable and dark room. Feed him as usual, also add a pinch of magnesium sulfate to drinking water later on.

6. *Cholera.*—This is a highly fatal infectious disease caused by microbes of the intestinal tract similar to *Pasteurella avicida (B. avisepticus)* of fowl cholera. The source of infection is dirty water and unhygienic methods of feeding.

Diarrhea with an offensive odor, thirst, vomiting and shivering will be evident; also cramps and convulsions eventually ending in death.

Treatment.—Drugs such as tragacanth, kaolin, chlorodyne and B. l. intesti-phage in drinking water have been tried without any success, the mortality being 100%. So, the best method of handling is prevention. Destroy the affected bird by adding a teaspoonful of camphor water to its drinking water. Strict sterilization of the cages, seed-hoppers, drinking vessels, and other utensils of the aviary should be enforced.

7. *Avian Diphtheria.*—This infection is caused by a filterable virus, the same organism that causes pox. It is generally brought about by bad food, dirty water and neglected cold. This condition is recognized by examining the mouth of the canary, wherein we find a yellow or greyish exudate extending to the throat region with fetid odor.

Treatment.—Destroy the infected canary at once, burn the cage and its belongings. Remove the rest of the birds from the aviary and

give them a good bath by keeping the birds in a bath cage, taking care to see that some reliable disinfectant such as lysol is added to water in the tub.

8. *Sweating.*—This happens to growing young birds in the nest during breeding season, the hen will sit very close to the young ones causing them much annoyance. Hence the young birds appear very miserable instead of looking hairy and fluffy.

Treatment.—Separate the cock from the hen; also the youngsters at times. Add five drops of Tr. gentian compound and two drops of Tr. ferric perchloride to the drinking water. This procedure will generally set right the hen and stop her bad practice.

9. *Egg-bound.*—This complaint also occurs during the breeding season. The hen shows signs of distress with feathers muffled and sits in a corner of the cage, as if about to die.

Treatment.—Remove the hen from the cage and hold her over a glass jar containing boiling water. Keep the hen in such a position as to expose the vent to the rising steam. After a few minutes of steaming, gently drop a little sweet oil or olive oil in the region of the vent and put her on the nest. This will set right the hen and the egg will be safely deposited.

10. *Pip.*—Is a condition in which the anal gland at the root of the tail enlarges with the accumulation of pus-like material.

Treatment.—Open the gland with a sharp pin or needle; allow the pus to escape. Clean the part with aseptic cotton wool and touch with a glycerine swab. If this complaint is neglected, the bird will die in a couple of days.

11. *Sore feet.*—This condition is brought about by bad perches.

Treatment.—Dip the bird's feet in warm water, thoroughly clean and dry them. Apply boric ointment.

12. *Inflation or Emphysema of the body.*—In this trouble, air accumulates underneath the skin and subcutis, and the bird appears bigger than its usual size.

Treatment.—Take hold of the skin between the thumb and finger and puncture skin with a sharp needle. The air will escape. Apply turmeric or Tr. benzoin compound to the wound. Allow green food, and add Tr. ferric chloride two minims and Tr. gentian compound five minims, glycerine 10 minims to the drinking water.

In addition to the diseases mentioned in the foregoing canaries develop many minor complaints such as overgrown beak, overgrown toe nails, cuts and injuries, etc., which do not require any treatment other than the usual routine and also careful handling during sickness.—*Indian Veterinary Journal.*

Poultry Practice

Methods of establishing poultry practices have been reported from time to time in various publications and it is necessary to say only that every graduate veterinarian has far more background upon which to establish a poultry practice than any of the so-called poultry technicians that have sprung up all over the country. There was a demand for a poultry health service or "quickie poultry doctors" would not be here. Had the veterinary profession, years ago, as equine practice passed out of the picture, been aware of the possibilities in poultry practice, they would be doing practically all this work at the present time instead of 10% of it, as is now the case. This would be greatly to the advantage of the poultry industry and would save it from the staggering losses from disease which it now endures.

The poultry remedy business has increased enormously during the past decade and is now firmly established. The local technician is supported by an extensive advertising program both by radio and in the press. The editorial policy of poultry magazines supports the plan of laymen doing this work. However, we still insist that any veterinarian can build up a good poultry practice if he so desires. Some, of course, are not interested, but many are, or should be. We believe that this association should do all it can to further the conviction among poultrymen that the veterinarian is the logical one to whom to go, when disease invades his flock.

The poultryman is not satisfied with the service he is now getting, despite the ballyhoo of the specialists and poultry nostrum vendors. His loss from disease is too high and he knows it. But relatively few veterinarians have offered to help him or have shown a sympathetic interest in his problems.

To those interested in beginning poultry practice in a small way, your committee suggests that they familiarize themselves thoroughly with fowl pox. In spite of the fact that we have a successful vaccine for the prevention of fowl pox, many thousands of dollars worth of poultry products are lost every year in Illinois to the ravages of this disease. The incidence of fowl pox is increasing rapidly and it will continue to increase as more and more new centers of infection are established. Very few poultrymen recognize fowl pox in the early stages, and if a veterinarian is able to do this for them and prevent an otherwise heavy loss, it will help his reputation materially and assist him in getting a start in poultry practice.—From a report of the Committee on Poultry Diseases, Illinois Veterinary Medical Association.

Clinical Reports

Congenital Diaphragmatic Hernia in a Dog

About 11 p.m., August 10th, one of my clients called me and stated that his dog, a male fox terrier about four years of age, weighing 12 pounds, was having trouble getting his breath.

The owner was instructed to bring the dog to the hospital and I would meet him there. When they arrived the dog was breathing very hard and was cyanotic. There was no elevation of the temperature. The animal had been normal an hour earlier when the owner let it outside before going to bed. He suspected poison or a bone lodged in the throat although he said they never fed bones of any kind to the dog.

I found no evidence of poisoning and, after examining the throat and cervical region, I didn't suspect a bone, yet I wasn't sure what the trouble might be. The dog had not been fed since morning.

The dog died a few minutes later and, on autopsy, an aperture about three inches long was found in the diaphragm. The stomach and some of the small intestine—about three feet—was located in the thoracic cavity. The stomach was ballooned with gas and enlarged to such an extent that it could not be pulled back through the rent in the diaphragm. Everything else appeared normal.

The owner had no idea how this condition might have happened. The opening through the diaphragm was not of recent origin and, as there was no history of trauma or previous ailment, I can only speculate it may have been congenital. This leaves unexplained the sudden onset of dyspnea and the early death after four years of normal existence.

JOE J. RIDGEWAY

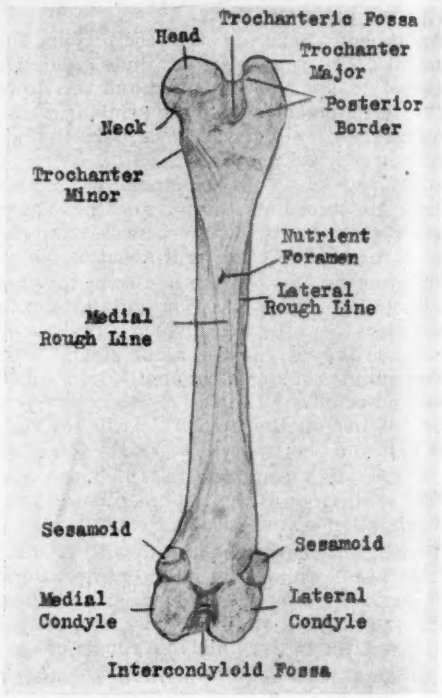
Ventura, Calif.

Internal Splint for Fractured Femur

Since reading of the German "nail method" of fixation of a fracture of the femur in man; we have tried it in a few cases in fractures of the femur in dogs.

In the German method, they drill a hole in the head of the femur and insert a noncorrosive metal tube, into the shaft of the femur. In a dog, with or without the aid of an X-ray or fluoroscope, we find it is not at all difficult to insert this pin in the manner which we have described.

With the animal under complete anaesthesia, we shave and disinfect a small area directly over the superior trochanter of the femur. This trochanter and its posterior border are easily recognized as they lie just under the skin. Without making a skin incision, we insert a sharp pointed drill at the top and just inside the posterior border of this trochanter. With the drill pointing parallel to the length



of the femur, it is easy to press it through the soft tissue directly into the fossa which lies between the trochanter and the articular head, or neck, of the femur. This fossa lies directly in line with the hollow shaft of the femur and a drill at this point will easily penetrate the soft bone and pass directly into the marrow cavity. It might be thought this would interfere greatly with the blood supply to the bone. In our experience it has occasioned no apparent harm.

For a drill, we use the pin or rod or a shorter length, filed on four sides to a sharp point. To make the drill point larger, the rod can be upset slightly at the end, with a hammer before filing. This will drill the soft bone and the round shank does not tear the soft tissue. After removal of the drill, the tube or rod of non-corrosive metal is inserted in this hole. It should be of a size a little smaller than the bone marrow cavity and in length a little longer than the femur.

The pin should first be inserted as far as the fracture. Here in most cases we find that contraction of the muscles has caused an overlapping of the ends of the bone. To correct this, we place a rope or towel under the leg at the groin and tie both ends firmly to the table. Now by grasping the foot strong, but gradual traction will stretch the muscles, align the bones and bring the broken ends in direct apposition. When this is accomplished, the metal pin can be inserted into the marrow canal of the bone below the break. In a few cases, it has been found necessary to make a two-inch incision parallel to the femur, directly down to the fracture to bring the broken bone into correct position. This wound when sutured, heals readily.

After the pin or rod is in position, we cut off the upper end just even with the skin and pull the skin over it. The skin wound will then heal.

We remove the pin in 15 to 18 days by making a small incision in the skin directly over the end of the pin and pulling it out with small pliers. To prevent rotation of the leg, we then place an adhesive tape splint from the hock to a point practically up to the hip joint.

To date, we have made our own pins or rods. For small puppies, we use a 2.5-inch, 16-gauge, hypodermic needle, for a 12- to 15-pound dog, we use a six-inch, eight or 10-gauge silver plated wire, and for larger dogs a one-eighth to one-thirty-second, eight to 10-inch, silver plated tube or rod is used.

BURT ENGLISH
G. J. GRISSAM
San Antonio, Texas.

Bilateral Keratitis with Secondary Glaucoma in a Bitch

"Cheapy," a six-year-old English bulldog bitch was presented at Consultoria Veterinario (small animal clinic) in Cali, Colombia, January 16th, 1946, with bilateral ophthalmia and keratitis for treatment.

Upon entering the clinic the following symptoms were noticed: continuous lacrimation, cloudiness of the cornea, protrusion of the left eyeball and the temperature 99.7° F. The cloudiness of the cornea prevented further examination. A diagnosis of bilateral parenchymous keratitis with secondary glaucoma was made.

This bitch had been treated by several other veterinarians who had tried every rational treatment including the injection of sterile milk and almost every suggested scientific remedy without success. The thought occurred to me that since it was almost impossible to find a scientific internal or local remedy against this kind of keratitis which would penetrate in the internal organs and destroy the cloudiness of the cornea, why not attack the condition by injecting my own blood as a foreign protein? So I began the treatment administering progressive doses of blood, beginning with 2cc the first day and increasing to 10cc the fifth day, and then decreasing the quantities to 2cc on the 10th day, thus:

Days	Quantity	Days	Quantity
1st	2cc	6th	10cc
2nd	4cc	7th	8cc
3rd	6cc	8th	6cc
4th	8cc	9th	4cc
5th	10cc	10th	2cc

At the end of this period I noticed a marked improvement and blood injections were discontinued. In 15 days all trace of cloudiness had gone, and the bitch was sent home with the eyes normal and vision restored.

Since I have treated six more similar cases with my own blood with the same success, however none of them had been treated unsuccessfully previously.

JOSE GONZALEZ ALVAREZ
Cartagena, Colombia.

Unexplained "Bottle Jaw" in Cattle

For a number of years I have been having occasional cases, some two or three each year, in cattle that I have not been able to diagnose to my satisfaction. During the past season I have had an even dozen of these cases. Hence a correct diagnosis seems more desirable than formerly when I thought each case would probably be the last one.

Usually in calling me the owner says the animal has not been able to eat or drink for one or two days and is swelling about the head. Snake bite, an object stuck in the throat and injury are about equally suspected as being the cause.

I find an animal, sometimes, but not always, having an elevation of temperature of two to four degrees; profuse salivation, sometimes dyspnea; always dehydration and considerable loss of flesh. The mouth is sore. All the lower portion of the tongue and the tissues under the tongue are edematous, backward to the base of the tongue and to the palate. The buccal surfaces and hard palate are normal. There is swelling under the mandible extending back onto the neck. In only two cases has there been any eroded areas on the mucous membrane.

Several different treatments have been used over the years but mostly alternatives such as the arsenicals and sodium iodide intraven-

ously. This has appeared to be beneficial to the animals but not spectacularly so. The loss has been small, only four cases to date.

During the past season I have used sulfanilamide; giving mature cows 1000 to 1250 grains at the initial dose and 300 grains every six hours thereafter for 48 hours. In addition I have had the swelling under the jaw and on the throat rubbed vigorously three times a day with a strong stimulating liniment. Results have been better and much prompter than formerly. That is when the animals are treated early in the attack. When treatment is delayed recovery is a tedious affair regardless of the treatment.

The large swellings under the mandible usually require opening about the third day. Afterwards the animal begins to eat and drink and recovery is uninterrupted.

When asked for a diagnosis, I say "malignant edema," but I'm not satisfied with it because of the character of the swelling. However, plant poisoning, allergy, snake bite, local injury, etc., are even less satisfactory as a diagnosis. I'm open to suggestions.—*R. J.*

Large Bovine Fetuses

The delivery of some unusually large calves was reported in the July issue of VETERINARY MEDICINE (page 254). An experience, during the summer, of Dr. Leonard Haubrich, Dr. Howard Adams and the writer may be of interest.

We were called in the early evening to attend a cow that had been in labor all day. From what the owner told us she had had plenty of assistance from the neighbors, but all to no avail.

The hind legs were in the vagina when we arrived. Try as we would we could not move the fetus either forward or backward. There was just sufficient room for a two-inch incision extending forward from the brim of the pelvis, and through this opening complete evisceration of the fetus was finally effected.

Then the hind legs were tied to a bar and with a great deal of torsion the calf was turned on its long axis until its pelvis was diagonal to that of the dam, after which we were able to deliver it.

Because of the great size of the calf it was decided to weigh it, but we found that the viscera had been scattered by the various farm hands present. However, without the viscera this calf weighed 168 pounds.

The cow lived but did not do well and after some weeks the owner sent here to be slaughtered.

CHARLES BELFORD

Deerfield, Mass.

The report of Doctor Hadder in the July issue of VETERINARY MEDICINE (page 254) interests me. I enclose a newspaper clipping and a photograph giving an account of a 156-pound calf delivered by my husband Oct. 18, 1945.

The cow was a purebred Brown Swiss belonging to the Dufresne Dairy in Granby. The cow and calf both lived and did well.

ANN C. (MRS. F. M.) AUSTIN

Belchertown, Mass.

In my 47 years in practice I have delivered many large calves. The larger two I think, although most of them were not weighed, were one from a Holstein-Friesian heifer, the other from a shorthorn cow weighing between 1500 and 1600 pounds.

The Holstein-Friesian heifer's calf weighed 192 pounds and was dead when delivered. The dam made a good recovery in about two weeks.

In the case of the shorthorn the farmer discovered the cow with the head of the fetus protruding beyond the vulva. It was dead. I cut off the head and pushed the fetus back until the fore legs could be brought up and properly extended in the vagina. Then with great traction applied to the neck and both forelegs the fetus was delivered, but not until we had anchored the cow by a halter and a rope placed over the back and passed between the forelegs and with the halter tied to a post.

The calf was an enormous one. The assembled neighbors guessed the weight all the way from 150 to 200 pounds. To decide the argument it was weighed. It tipped the scales at 220 pounds.

It would be a great satisfaction if I could say the cow lived, but alas she never got up.

GEORGE O. SMITH

Ligonier, Ind.

By way of contrast a recent issue of the *National Provisioner* contained a report of a calf alive and normal which at birth, weighed but nine pounds and was 17 inches high.

However, the record for smallness seems to be held by a calf reported in the June, 1934, issue of this magazine by Dr. R. B. Doty, Safford, Ariz. This calf weighed eight pounds at birth. It and its dam are shown in the accompanying illustration.

Does anyone know of a smaller calf?

Foot Amputation by Bailing Wire

The report of the case of auto-amputation in a heifer (*Vet. Med.*, October, 1946, page 370) recalls two such cases that have occurred in my practice. In Doctor Thompson's case the manner in which the amputation occurred was not determined. In both of my cases the animals had stepped into a coil of bailing wire which was apparently firmly attached at one end. In struggling to free itself the animal had first locked the wire about its leg and then broken it, with the result that the circulation in the foot was completely shut off and sloughing followed.

N. F. DUNHAM

Hutchinson, Kans.

Operation for Urinary Calculus In a Steer

In 1941, while practicing at Haigler, Nebraska, we were called to the Harford Ranch north of town to treat a Hereford steer. This animal was one of a herd of steers, about 18 months of age, which were being fattened for market. A marked restlessness and nervousness was the only history obtained from the owner. This was the only animal in the herd at the time that was affected but the owner said he had noticed other animals showing similar symptoms at various times. All had recovered.

Upon observing the animal a marked uneasiness, characterized by frequent lying down and immediately rising was noted. A constant dripping of urine from the penis and urinary salts on the preputial hairs were also noted.

A rectal examination showed the bladder to be distended. Palpation of the urethra over the ischial arch revealed a slight pulsation. A provisional diagnosis of urinary calculus was made.

The animal was cast and given 20cc of procaine hydrochloride (1%) epidurally. This caused relaxation of the penis. A lead wire probe was then passed up the urethra until a grating sensation was felt. This confirmed the diagnosis. The area below the ischial arch and just posterior to the base of the scrotum was shaved. The subcutaneous tissues were infiltrated with a 1% procaine solution, and an incision about three inches long was made in the median line above the base of the scrotum. The loose tissue was broken down with the fingers which permitted the penis to be grasped. The S-shaped flexure of the penis was thus straightened and pulled through the incision. Palpation of the urethra disclosed the obstruction to be just above the flexure. An incision was made in the urethra and a single calculus was removed.

There are several theories as to the cause of urinary calculi. Some investigators believe they result from a lack of vitamin A; some assume they are due to ingestion of excessive amounts of calcium and phosphorus in the feed and many feel that calculi arise from a lack of water since this condition is more common in the winter months and is to a considerable degree confined to cattle raised in arid sections. The owner was advised to keep the ice off the water tanks to allow plenty of water and to cut down on the percentage of concentrates by changing the diet of his feeder steers.

TED DALZIEL

San Mateo, Calif.

Teniasis in Lambs

Veterinary literature dealing with the ailments of horses, cattle and swine is abundant but, in the main, is lacking in material concerning the ovine species.

My practice is predominantly with dairy animals and swine, but I have noticed a steady increase in the sheep population in this section. It is not uncommon to find up to 100 sheep on a farm now where only a few years ago there were none. The fact that sheep require less feed and attention than cattle or swine makes for their increasing popularity with farmers who have insufficient help on their farms.

This increase in the number of sheep presented a new problem in practice for me and as a result I have been reviewing the ovine literature and find it lacking in many respects. Further, some of it is difficult to obtain.

There are numerous articles on worms in sheep, but very little about the tapeworm. The few who have written on that subject rarely class tapeworms as of economic importance. Tapeworms are said to be rarely pathogenic for mature sheep, although sometimes harmful to lambs, in which case the usual symptoms are unthriftiness, enteritis or constipation, rough coats and anemia followed by edema, pot bellies and retarded growth. It is

said that frequently a chain of segments is to be seen hanging from the anus. According to Mönnig diagnosis is made by observing the lambs to be pot-bellied and stunted in appearance and confirmed by finding, in the feces, ripe tapeworm segments, which resemble cooked rice grains. The eggs of Moniezia can be obtained and identified from these segments.

In view of the foregoing, the following cases of tapeworm infestation in lambs seem to be atypical, as the lambs were in excellent condition and showed none of the symptoms given in the preceding paragraph. Segments and eggs were not looked for as tapeworms were the last thought in my mind when I examined the lambs. It was only upon the post-mortem examination that a correct diagnosis was made, or could be made if one relied upon the literature.

This same experience has been repeated three times since, in my practice. From the lessons learned from the first case I was able to make a correct diagnosis promptly in the later cases and to institute successful treatment.

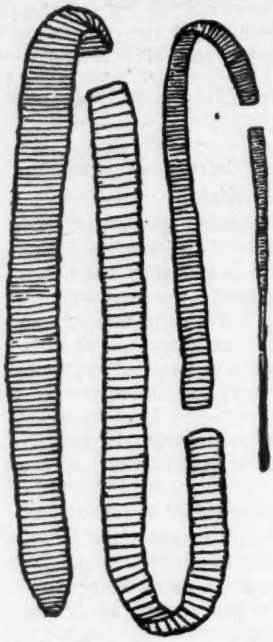
June 5, I was called to a nearby farm to see some lambs that had died that morning. The farmer stated that all his lambs had been in excellent condition, but two were found dead that morning and another had suddenly gone into convulsions at about 10:30 a.m. and died in 15 minutes. When a fourth dropped to the ground in a convulsion he called me.

On arrival at the farm, I found a ewe lamb weighing about 60 pounds lying on her side, foaming at the mouth and pawing the air. The conjunctivae were inflamed and the respiration was quick and labored. The temperature was 105° F.

The only addition I was able to get to the anamnesis obtained over the telephone was that these lambs had been fed a phenothiazine-salt mixture with the ration. The lamb I had been called to see died a few minutes after I arrived and a necropsy was made immediately. The abdomen was opened first, as I suspected some type of poisoning and hoped to find the answer in the intestinal tract. The spleen, liver, pancreas, kidneys and bladder were normal. The stomach was filled with food, but had no areas of inflammation. The intestines, however, were packed with tapeworms of the Moniezia species. How this animal could have even survived, not to say thrived, with the intestine so packed with tapeworms I will never understand. There was no room for anything else.

The carcasses of the other three animals, which had been in the same good condition as the first, were cut open and all three revealed the same—the small intestine packed with Moniezia. There was ample evidence that all three animals had struggled violently before death.

The following morning the flock was wormed with copper sulfate and nicotine sulfate (black leaf 40), one ounce of each in one gallon of water. The dosage was one ounce for 30 pound lambs, two ounces for 60 pound lambs and three ounces for adult sheep. Many tapeworms were expelled. There have been no losses in this herd since.



The intestines of the lambs were packed with tapeworms of the Moniezia species. After worming the remaining lambs many tapeworms were expelled. Illustration shows natural size portions of the adult. Segments found in the feces were whitish to yellowish in color and they resembled cooked rice grains *M. Expansa* (after Railliet)

In the three cases that I have had since, the history and symptoms were identical to those in the case described. The same treatment was given, i.e., worming, and it was successful in all three herds.

The outstanding characteristics of these cases were: (1) the excellent condition of the lambs, (2) the absence of stomach worms or intestinal round worms and (3) the fact all the lambs died in convulsions. None were noticeably pot-bellied or anemic and no segments were seen hanging from the anus, nor were these symptoms apparent among the living members of the herds.

The cause of death in these cases was probably an intoxication due to absorption of metabolic products of the worms—or was it?

HARVEY G. TABLEMAN

Warren, Ill.

Abstracts

Consuming Grasshoppers Fatal to Turkeys

The author[47] describes a condition in turkeys in which sudden death occurs in apparently healthy birds. Other than the findings mentioned below, no changes were present on necropsy.

The crop was distended and when opened was found to be filled with grasshoppers of a reddish color, giving, at first glance, the impression of hemorrhage into this organ. The grasshoppers were identified as *Melanoplus femur-rubrum* and *M. mexicanus*. It has been reported that gallinaceous birds may be killed by eating grasshoppers, particularly where they are eaten in abundance without any appreciable amount of other food being taken at the same time. Death is caused by the hard parts of the grasshopper, particularly the heavily spined legs, not only irritating but actually puncturing the crop and intestines.

Non-gallinaceous birds are apparently not affected in any way by eating an over-abundance of grasshoppers.

Toxicity of Orchard Spray for Swine

In an experiment to determine if cull[44] fruit contaminated by orchard spray constitutes a poison hazard for swine, McCulloch and associates fed parings from heavily sprayed unwashed apples to a group of five pigs. The feeding continued for 283 days. One pig received in that time a computed quantity of 114.84gm of lead arsenate, another received 29.3gm of arsenic trioxide and others ate lesser amounts of the spray residue.

The animals receiving the spray residue gained in weight at approximately the same rate as the controls and no abnormalities were apparent in the blood studies. Of the edible parts of the carcasses only the livers contained more lead than the 7.14 p.p.m. limit, set by the Food and Drug Administration for apples and pears. All parts of the carcasses were within the 3.57 p.p.m. tolerance allowed for arsenic.

The authors state the amount of spray residue consumed by the swine in this experiment was greatly in excess of that which would be consumed by pigs fed cull apples or pears according to commercial practices.

[47] Wickware, A. B. Grasshoppers. A potential danger to turkeys.—*Canad. J. Comp. Med.*, 9, pp. 80-81. 1945. Abst. in *Vet. Bul.*, 16:1. 1946.

[44] Groves Kermit, McCulloch, Ernest C., and St. John, J. L. Relative toxicity to swine of lead arsenate spray residue, lead arsenate, lead acetate and arsenic trioxide. *J. Agr. Res.*, 73:5, pp. 159-166. 1946.

Absorption and Excretion of Streptomycin

Fourteen normal male and female dogs were divided into four groups. Group I was anesthetized. Streptomycin[48] was administered intravenously to Groups I and II; intramuscularly in Group III, and orally (*via* the stomach tube) in Group IV. Groups I, II and III received 100,000 to 210,000 units. Group IV received 210,000 to 420,000 units.

High blood levels of streptomycin were detected in the plasma of groups I to III from 18 minutes to 1.5 hours after injection. Only a trace remained at 5.5 hours. The maintenance of blood levels was no better after intramuscular than following endovenous administration.

Streptomycin was not detectable in the blood following oral administration (Group IV).

Vitamin E a Remedy for Muscular Dystrophy in Lambs

A muscular stiffness of young lambs ("stiff-lamb disease") has been reported from many states and from many foreign countries. It occurs in suckling lambs born before the grazing season and abruptly disappears soon after the ewes are put on grass. Some have reported that the disease occurs only in the lambs of ewes maintained through the winter on low grade hay. Willman[40] and associates found it in New York State in farm flocks fed alfalfa hay. The microscopic lesions consist mainly of white areas in the skeletal muscles and occasionally in the right ventricle. The condition has been clearly demonstrated to be related to the ration fed the ewe. In one experiment in which the ewes were fed alfalfa hay and cull beans 58% of the lambs were affected. In another experiment in which the ewes were fed alfalfa, cull beans, oats and barley, 12% of the lambs were affected. In a third experiment the addition of wheat bran to the foregoing ration further reduced the percentage of disease in the lambs.

In 1945 an experiment was made in which every fifth lamb was given 2cc of an 8.25% solution of mixed tocopherols (vitamin E) once a week from birth until the flock was turned on pasture. Only one of 18 lambs showed symptoms of the disease.

In an experiment to test the curative value of vitamin E in stiff-lamb disease, 25 stiff

[48] Graham, Boyd E., Vander Brook, Milton J., and Kuizenga, Marvin H. Preliminary studies on the absorption and excretion of Streptomycin. *Science*, 103:2673, pp. 364-365. 1946.

[40] Willman, J. P., Loosli, J. K., Asdell, S. A., Morrison, F. B., and Olafson, Peter. Vitamin E prevents and cures "stiff-lamb disease." *Cor. Vet.*, 36:2, pp. 200-204. 1946.

lambs were divided into two groups. The first group of eight was given no treatment and five died, three recovered. The 17 lambs in the second group were given vitamin E, in most instances only a single dose, and all recovered. The results were essentially the same in a similar experiment in 1944.

The lesions in "stiff-lamb disease" and in "white-muscle" disease in calves are very similar to those occurring in vitamin E deficiency in these animals.

Time of Insemination and Fertility

Results reported[46] in this paper indicate that higher fertility and hatchability were obtained when hens were artificially inseminated in the late afternoon than when insemination took place in the early morning or at noon. This higher fertility and hatchability were shown to be related to the fact that a larger percentage of hens have a soft egg in the lower region of the oviduct late in the day. Hens observed by anal palpation to have a hard-shell egg in the oviduct at the time of insemination produced a lower percentage of fertile eggs. Parker suggests that it would be possible to increase fertility and hatchability by restricting the mating of hens to the afternoon.

Kidney Lesions in Equine Infectious Anemia

The author[45] emphasizes the importance of kidney examination in the diagnosis of equine infectious anemia, especially in doubtful cases in whish piroplasmosis or septic processes may be involved. In 40% of 150 p.m. examinations pronounced macroscopic changes were found in the kidneys; such changes were found in 77% of acute cases and 9% of chronic cases. These changes included enlargement of the kidney, erythema and punctate redness under the capsule, fine granulations on the section surface and grey nodes in the corticular substance. Histological examinations were made on kidneys from 800 cases of equine infectious anemia. Changes in the Malpighian bodies included swelling, hyperemia, proliferation of the histiocytes and lymphoid cells and hemosiderosis of the Bowman's capsules. There was granular and fatty degeneration and sometimes necrosis of the tubular epithelium, with occasional hemosiderosis of the convoluted tubules and in the interstitial tissue there was perivascular, periglomerular and intertubular infiltration with lymphoid cells.

Degenerative and exudative changes characterized the acute cases, and proliferate and sclerotic changes were typical of the chronic cases.

Xanthomatosis in a Dog

An 8-year-old dog showed at necropsy vascular lesions that have not been described as occurring spontaneously or following experimental procedures.[48] These can be classified as a primary essential xanthomatosis of the hypercholesteremic type. Initially, foam cells containing nonsaturated glycerides and cholesterol or its esters appeared in the media of muscular arteries and to a lesser degree in the elastic arteries. The histogenetic evidence indicates that the lipid-containing cells were derived from the smooth muscle cells of the media. Subsequently, connective tissue proliferation developed in which arteriolar formation was prominent. Iron-staining material that differed tinctorially from hemosiderin occurred in the majority of arteries involved in the xanthomatosis. Eventually, in many vessels the entire structure was transformed (metallaxis) by the combination of atheromatosis, fibrosis, and siderosis.

Toxicity of Benzyl Benzoate

The use of benzyl benzoate for scabies in man was popularized by the wide employment of this parasiticide in the Army. Clinical reports, some of them recording thousands of cases, have been common of recent years in the medical literature of this country, Britain and France. In man cases of dermatitis due to the drug are comparatively rare.

Graham and Kuizenga[42] studied the irritant and lethal effect of benzyl benzoate and related benzyl compounds on the normal skin of rats, rabbits, cats, dogs, swine, sheep, cattle and horses.

The first three, rats, rabbits and cats proved highly susceptible to both the irritant and lethal properties of benzyl benzoate. Dogs were far more resistant, tolerating 10 times the lethal dose (per kilogram) for cats. External applications were nontoxic to dogs, swine, sheep, cattle and horses.

[46] Parker, J. E. Relation of time of day of artificial insemination to fertility and hatchability of hens' eggs.—*Poult. Sci.*, 24, pp. 314-317. 1945. Abst. in *Vet. Bul.*, 16:1. 1946.

[45] Fedorov, A. I. Patologicheskaya anatomiya pochek pri infektsionnoi anemii loshadei. [The pathology of the kidneys in equine infectious anaemia.]—*Trud. XV Plen. vet. Sekt. Akad. sel'khoz. Nauk, Moscow, 1939.* [*Diseases of Horses.*] pp. 28-30. 1941 Abst in *Vet. Bul.*, 16:1. 1946.

[48] Bloom, Frank. Xanthomatosis of the arterial media in a dog. *Am. J. Path.*, 22:3 pp. 519-537. 1946.

[42] Graham, Boyd E., and Kuizenga, Marvin H. Toxicity of benzyl benzoate and related benzyl compounds. *J. Pharmacol Exp. Ther.*, 84:4. 1945.

BUY U. S. SAVINGS BONDS

Comparison of New and Old Insecticides

In order to ascertain the comparative efficacy of new and well known insecticides in the control of lice and mites in poultry tests[41] were made with DDT (Dichlorodiphenyltrichloroethane), a 10% formulation of "Lethane A-70,"[1] "NH Dust,"[2] sodium fluoride, sodium fluosilicate, sulfur dust, rotenone, pyrethrum, nicotine (dilution of "Black Leaf 155"), and nicotine sulfate ("Black Leaf 40"). The study was conducted with a flock of about 150 mature White Leghorn chickens infested with lice and mites, practically all of which were infested in varying degrees with the following ectoparasites: Body lice, *Menopon gallinae* (Linn.), *Goniocotes gallinae* (Degeer), and *Eomenacanthus stramineus* (Nitzsch); wing lice, *Lipeurus caponis* (Linn.); and wing mites, *Pterolichus obtusus* Robin. Most of the body lice found were of two kinds, *M. gallinae* and *G. gallinae*. *E. stramineus* was only found occasionally on the birds. A few groups of chickens were found infested only with the body mite, *Megninia cubitalis* (Megnin).

Materials and Methods

The chickens used in these experiments were kept in lots of 4 to 12 in a subdivided open poultry house having wire sides and floors. Most of the insecticides used were applied to all parts of the body with the aid of a salt shaker. Six grams of each insecticide was applied to each bird. When the insecticides were diluted pyrophyllite was used. Each bird was examined for parasites 48 hours after treatment.

Of the various insecticides used, 10% formulation of "Lethane A-70" and full concentration "NH Dust" were found superior to the other insecticides tested in their ability to kill all the above indicated lice and mites within a period of 48 hours.

Five percent DDT, undiluted sodium fluoride, and undiluted sodium fluosilicate dusts were as effective as 10% "Lethane A-70" or "NH Dust" in their ability to kill all body and wing lice, but less effective in killing wing mites. These three dusts were also effective in drastically reducing infestations of the body mite, *Megninia cubitalis*.

A single application of 10% "Lethane A-70" on a group of 12 chickens infested with the common red mite *Dermanyssus gallinae*, and dusting of the chicken house and ground underneath, eliminated all the mites on the birds and reduced to a small proportion the mite population on the house and on the ground.

[41] Alicata, J. E., Holdaway, F. G., Quisenberry, J. H., and Jensen, D. D. Observations on the comparative efficacy of certain old and new insecticides in the control of lice and mites in chickens. *Poultry Sci.*, 25:4, pp. 376-380. 1946.

[1] A product of Rohm and Haas, Philadelphia.

[2] A product of John Powell Export Corporation, New York.

Pullet Disease or Blue Comb

In the northeastern states, in the Midwest and perhaps in other areas where it has not been recognized "pullet disease" has caused heavy losses in maturing pullets.

The disease has been known by various names but the author[49] favors "blue comb" since it describes a characteristic although not a pathognomonic symptom. Other symptoms are sudden loss of appetite, tendency to droop, sometimes to huddle, diarrhea, a change in appearance of the flesh on the breast which becomes pale, shriveling of the legs, hemorrhages in the liver and nephritis.

Blue comb is most common in mature or maturing pullets, but it may occur also in cockerels, young chicks and old hens. From one-third to one-half the pullets in the flock are commonly affected and the case mortality ranges from five to 25%.

Three treatments, all stated to be successful are given by the author.

1. Feed a wet mash composed of ground oats 50 parts, wheat bran 50 parts, blackstrap molasses 10 parts and water five parts.

2. Substitute a poultry fitting ration containing considerable molasses for all scratch grains and add molasses to the drinking water —one pint to the gallon.

3. Add one tablespoonful of ordinary fertilizer grade muriate of potash to the gallon of drinking water or add 1.5% of this chemical to the mash.

Where treatment is commenced early prompt recovery follows any of these treatments, according to Lee.

[49] Lee, C. E. Pullet disease or blue comb. *Poultry Digest*, 5:56, pp. 453-457. 1946.

Useful Bulletins, Circulars, Etc.

Bovine Mastitis.—Cir. 233, Kansas State College, Manhattan.

Poultry Diseases, Their Prevention and Control.—Bul. 326, Kansas State College, Manhattan.

The Story of Streptomycin.—Merck & Co., Rahway, N. J.

Mastitis in Beef Cattle.—Article 29-1 Michigan Agr. Exp. Sta., East Lansing.

The Use of DDT.—Directions for fly control on dairy farms. New York State Department of Health, Albany, N. Y.

Instructions for using Antu as a Poison for the Common Norway Rat.—Public Health Reports 61:17 (Apr. 26), 1946. For Sale by the Superintendent of Documents, Washington 25, D. C. Price 10 cents.

Book Reivews

Secretion of Milk.—By *Dwight Espe*, Assistant Professor of Animal Husbandry, Iowa State College. Third edition, 314 pages, 61 illustrations; published by the Iowa State College Press, Ames, 1946. Price $3.25.

This work, certainly not a veterinary work and admittedly not intended for the practical dairyman has been popular with veterinarians through two editions and will no doubt continue in favor through the present edition, which appears to embody but slight changes.

There are but nine chapters in the book—phylogenetic development of the mammary gland, anatomy of the udder, nervous control, theory of milk secretion, factors affecting the amount and composition of milk, miscellaneous factors related to milk secretion, hormonal control and two chapers on effect of feed on the amount and composition of milk. It contains 1294 references to the literature. Notwithstanding the voluminous literature, the chapter on nervous control of milk secretion and particularly of the "letting down" function are not in accordance with modern concepts, but distinctly outmoded. The same statement applies to some of the criteria, such as size and depth of the milk well, given for judging cow's capacity for milk production. Horse racing fans laugh when they speak of spending an afternoon "improving the breed" but the author appears to be wholly serious in writing that fair boards offer thousands of dollars each year "for the improvement of the type." Notwithstanding a few minor things subject to criticism the work is a comprehensive one of great value.

* * * *

Simple Secrets of Dog Discipline.—By *Horace Lytle*. 63 pages. Published by G. P. Pulnam's Sons, New York; 1946. Price $1.50.

The author is co-editor of *Field and Stream* and a famous judge of field trials. He has written this booklet at the insistence of friends and "primarily for those who are faced with the problem of owning a puppy for the first time."

The discussion includes somewhat more than is inferred in the title. Half of the space is given to the selection, care and feeding of a puppy and the remainder to training, particularly house breaking.

Some calculation has indicated that the questions asked veterinarians most frequently by dog owners are, in diminishing order of frequency: (1) "What breed is he?", (2) "What shall I feed him?", and (3) "How can I housebreak him?" This little work will serve very well as an answer to the third question, and aid somewhat in replying to the second. All instructions are as stated in the title, simple. They are understandable by anyone. In the matter of handling disease the author says:

"Locate the best local, licensed, graduate veterinarian; and if he is the sort to merit your confidence give it to him—fully. That suggestion is worth ten times more than anything I might tell you myself on treating any sick dog. I have, perhaps, fairly intelligent ideas, for a layman, about different sicknesses in dogs. But my veterinarian knows infinitely more about it than I do, therefore, I take my sick dogs to him, always, and quickly.

* * * *

Practical Veterinary Pharmacology, Materia Medica and Therapeutics—By *Howard Jay Milks*, D.V.M., Professor of Therapeutics and Director of the Small Animal Clinic, New York State Veterinary College at Cornell University. Revised 5th Edition with Addenda. 695 pages. Published by Alex Eger, Inc., Chicago, 1946. Price $8.00.

This edition of Milk's Pharmacology, without the addendum was reviewed three years ago (V. M., January, 1944, page 39). In accord with the author's and the publisher's long standing policy of keeping the work uptodate this reprint of the 5th edition has been issued with what is called "an addenda" (sic.) of 22 pages in which is included a discussion of 12 recent additions to the veterinarian's armamentarium—penicillin, tyrothricin, streptomycin, steptothricin, sulfamerazine, sulfapyrazine, sulfasuxidine, sulfathaladine, DDT, hexachloroethane, iodinated casein and benzyl benzoate.

Since, under present conditions in the printing industry, it takes many months just to print and bind a book, additions to our knowledge of these newer agents during the past 12 to 15 months are not reflected in the above mentioned discussions of them. And since no changes were made in the main section of the work the same applies to a somewhat larger list of new therapeutic agents appearing for the first time in the 5th edition three years ago. This seems unfortunate in a field where new discoveries have been as rapid as they have been among the sulfa drugs and antibiotic agents. There is, of course, certain information, given of a historical nature, concerning the composition, the preparation and use of these remedies that is fundamental and important, however, our conception of the indications for the use of various of these new remedies, has changed materially since they were introduced, as a result of clinical experience with them.

* * * *

Any book reviewed in these pages, or any other book if available, may be obtained by remitting the published price to VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago 49.

Veterinary Practice VI

Dispensing

By E. T. Baker
Moscow, Idaho

IN conducting a general country practice one will soon learn the value of keeping sufficient supplies on hand for everyday use, and also for emergency calls during the night or on holidays when all the stores are closed.

Another thing to keep in mind is the great difference in practice from former years. Thirty years ago, most of our work was with horses, and much of it was of a chronic nature, such as lameness, blood dyscrasias and lung fevers. Today, practically all of my work is of an emergency nature, such as azoturia, colic, bloat, milk fever, infections, wire cuts and other injuries due to accidents. These all require immediate attention. There is no time for prescription writing. Perhaps, the advent of the auto has been a major factor in bringing about this change.

As Andrew H. Brown would say, "As I views th' sitchyashun," three factors are involved in the handling of medicines and supplies:

1. *The druggist.*—He is usually a fine fellow and deserves a share of the business. Thus, we often tell a client what to get at the drug store even if we do not write a formal prescription. This, of course, applies to simple remedies. We purchase our common drugs and supplies from the local druggist, and specialties from the commercial supply houses. Our druggists are all friends, and they realize how much emergency business we have, and do not resent a moderate amount of dispensing or leaving medicines with the client. By cooperating with the druggist, and giving him a large share of our business, even if we can purchase them a little cheaper elsewhere, much ill feeling is averted. The practitioner who loads up on common drugs and feed supplements by the ton, and supplies everything to his clients without going near the druggist will not gain much by it.

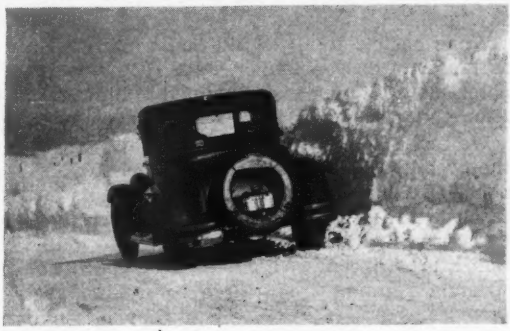
2. *The client.*—He often wants "dope fer that there sick cow" when he thinks she needs it, whether it is midnight or four o'clock in the morning. If one is able to supply these emergency calls at any time of night or day, week day or Sunday, it brings more business to the practitioner. Many clients, when they drop in for a little medicine of this kind, may make arrangements for other work, such as vaccination, castration, floating teeth, etc.

3. *The veterinarian.*—Nothing will decrease practice like the indiscriminate writing of favorite prescriptions or peddling tonic or mineral powders. In a short time the practitioner will have little to do, for all the farmers will be using the old prescriptions and lending them to each other. Then, when they purchase some tonic or mineral powder, they expect this to "cure" anything. On the other hand, moderate dispensing keeps the clients coming, and brings more business, as mentioned above. It saves the client money also.

Another thing, a client may want you to come out to his place on a side road with the snow or mud up to the running boards. He may not pay for the call, but will pay cash for a bottle of medicine, which may do some good.

The Old Army Game

Finally, by not writing favorite prescriptions, practice is not curtailed in outlying districts, as one experience taught me while I was young and trustful and thought God took care of the working girl.



You may be called to a farm on a side road in snow above the running boards

A farmer named Joe, from an adjacent town where there was no veterinarian but one drug store, dropped in to get a prescription for colic. I wrote it out for him, and in a short time it was noised around that little burg, "that Joe had a slick cure fer colic." The druggist soon built up a big business by recommending it to all his customers, and I did not get a call to that neighborhood, except for an occasional milk fever, for over ten years. Finally, the druggist retired and moved away, and they turned the store into a pool hall.

One day, soon after this sad event occurred, an old friend of Joe's hustled up to me and asked in a very confidential tone of voice:

"Doc, you ain't got no time to write that colic cure you give Joe, is you?"

With a voice choked with emotion, we replied we had forgotten or mislaid the exact formula, but we had some made up at home that was giving us even better satisfaction. So he came down and got a bottle, and soon we had our old business back again. It has also remained there.

One sheep man offered me $500 for the exact prescription of a certain formula for foot rot, but I told him written directions would do no good. Practitioners will understand why. For a price like that he would expect immunity for life from losses due to foot rot. Anyway treatment of a single outbreak a few years later cost him $900 for 9000 sheep and he got his money's worth. Of course we are like one of our local merchants who advertised: "We lose money on every sale, but it is the volume of business that keeps us going." Otherwise we couldn't treat foot rot in sheep for 10 cents apiece.

Turning the Other Cheek

Another wrinkle we have employed for years gives our sinful soul the satisfaction of knowing we have performed our good deed for the day.

While out on a call to Bill Smith's, he tells us his next door neighbor, Sam Hill, who is notoriously stingy, has complained to him that "Doc charges like old Ned fer his medicine."

We make a mental note of this, and when the overcharged farmer comes in "fer a little dope," we happen to be fresh out. It is so rarely called for, we explain, that we do not carry it regularly, but we will be glad to write him a prescription. We choose a simple little formula running from three to five rollars or more.

The next time Sam drops in to see us, he begins, very affably:

"'Member that cow dope you give me last year; wonder ef I kin git a bottle?"

We pour out a pint bottle, and charge him a dollar, and he goes his way, a well satisfied client.

As every practitioner knows, dispensing requires a sense of humor, as well as a rudimentary knowledge of rural psychology. Now I am only an amateur at this game, but I treat a client much like the local merchants handle me. That is like the ones that make me like it. If the farmer notes we are in no rush to fix up some medicine for him, he figures we hesitate on account of making no profit. We have been told experienced widows employ this well known "hard to get" attitude.

"We don't peddle medicine, except in our practice," we say in a nonchalant manner, showing him a bottle of highly colored, aromatic liquid. He looks at it and then takes a sniff:

"Gosh, Doc, that sure has a powerful smell; it must be good." Then he adds: "Kin you spare a bottle, Doc?"

"Well, we haven't much left, but I guess I can spare that bottle if you don't tell anybody where you got it," I reply very confidentially.

This is the best way in the civilized world to advertise a certain product. Soon, all the neighbors will be coming in and wanting to get some of that "there stuff fer bringin' cows back to their milk."

And so summer passes into autumn, and then comes winter, often to be followed by spring. Each season of the year, and each kind of weather, brings a demand for certain kinds of medicine.

In winter, it is for "compaction in hosses or bound-up cows."

Comes gentle spring, with its scours, bloat, plant poisonings, milk fevers, "calf pullin's" and other kinds of juvenile ailments. When the weather is at its worst and the roads are the muddiest it is then our 'phone rings the most.

Summer brings its quota of bloats, wire cuts, milk fevers and poisonings.

Autumn rolls around with founders, foot rot and all kinds of digestive troubles.

We always try to keep our supplies ready for the demand. There is only one time to conclude a business deal, and that is when the client is "ready an' willin'."

The size of the container is a vital factor. The older we grow the more we see the value of proper dilution of various medicines. In this form the system will absorb it more readily, and a pint or quart will give far greater results than an ounce or two of undiluted medicine.

Color and odor are also important to the client, and taste to the patient is secondary, provided the owner administers it.

Never dispense any poisonous fluids, tablets or pills. We have followed this rule for many years.

We give "kids" a little medicine for their pets without charge, and often to 4-H club members as well. The poor client, and the one who always has hard luck, are not charged. That is, unless their calls become unnecessarily frequent.

We figure we make enough off our moderate amount dispensing to pay for all the medical and biological supplies used in practice.

(To be continued)

VOL. XLI

Subject Index

1946

A

AAF, veterinary service of, 158
Abortion in ewes, 40
Abortion in mares, 423
  vibrionic, 380
Acariasis of swine, 318
Acaricides, the best of, 115
Acetonemia, 241
  in cows, 217
Acid-proof floors, 252
Age of reproduction, 301
Agriculture & veterinarian, 67
Agriculture report, 1868, 85
Allergy, atopy, 416
Amputation, foot, 455
Anaphylaxis, atopy, 416
Anaplasmosis, 120
  effect of age, 407
  lowers fertility, 371
Anemia in brood mares, 274
  infectious, 458
  lesions of, 458
Anesthesia, alcohol-glucose, 79
  in cattle, 90
  in large animals, 47
  produced by cold, 119
  regional, 47
Anesthetic, a new, 262, 297
  for horses, 157
Animal experimentation, 157, 272, 305, 374, 443
  diseases communicable to man, 165
  hospital, elaborate, 24
  hospital architecture, 16
  hospital and residence, 18
  hospital construction, 16
  hospital "Dogwood," 15
  hospital drawings, 10, 17, 19, 20, 23
  hospital essentials, 20
  hospital financing, 29
  hospital, humane association, 44
  hospital, inexpensive, 19
  hospital, modern, 22
  planning, 1
  hospital remodeling, 15, 16, 21
  hospital, small town, 26
  shelter hospital, 21
Animals not harmed by, 2,4-D, 119
  prices of farm, 422
Ano-vulvar laceration, 296
Anthrax, penicillin in, 421
  vaccine, vehicle for, 44
Antiseptic, a new, 297
Antiserum, production of, 162
Antimosan in trypanosomiases, 217
Antivivisectionists, 186, 272
  aims, 305
  claims, 425
  opposed, 303, 416
ANTU, toxicity of, 302
Architecture, hospital, 16
Army discontinues cavalry, 43
  food committee, 221
  food inspection in India, 349
  Reserve Corps, 420
  School of Meat & Dairy Hygiene, 418
  subsistence purchases, 80
  veterinary appointments, 419
  Veterinary Corps, 80
  V.C. activities, 50
  V.C. consultants, 221
  veterinary service, 335
Army Officers retired
  Allen, Maj. J. K., 67
  Bridges, Col. B. C., 64
  Buffin, Col. K. E., 66
  Dean, Col. W. H., 64
  Foster, Col. R. J., 62
  Greer, Lt. Col. C. S., 66
  Houston, Col. W. H., 66
  Kelser, Brig. Gen. R. A., 46
  Koon, Col. G. H., 62
  Leininger, Col. D. B., 63
  Nye, Col. E. L., 65
  Ramsey, Col. Mott, 64
  Waters, Col. F. C., 65
Army Officers retired
  Watson, Col. H. L., 65
  Woodruff, Col. F. H., 66
Arsenic poisoning in a cow, 257
Ascariasis of swine, 315
Associates Serum Producers, 82
Atopy, anaphylaxis, 416
Auto-amputation in cow, 370
Avian coccidiosis, 86
  pneumoencephalitis, 188, 224, 383
A.V.M.A., Boston meeting of, 223, 333, 379, 426
  new officers, 335
  president's address, 335
  research council, 49
  research fund, 48
Awards—see civilian and military
Azoturia, 280

B

Bacitracin, value of, 80
B.A.I., report of chief, 161
Bandages, fiberglas, 79
Barrett heads Fort Dodge, 116
Beef production, 161, 185
Benzyl benzoate for mange, 164
  benzoate, toxicity of, 458
Big head in sheep, 55
Bloat, cause of, 44
Blood samples, collecting, 150
Blood transfusion, 91
  transfusion direct, 174
  transfusion in cattle, 413
Blue comb in chickens, 459
Book Reviews
  Animal Breeding, 332
  Animal Breeding Plans, 220
  Clinical Laboratory Methods and Diagnosis, 219
  Crossroads for Penelope, 41
  Dairy Bacteriology and Public Health, 147
  Doctor Please Tell Me about My Dog and Cat, 330
  Dogs in the News, 220
  Glycerin, Its Industrial and Commercial Applications, 148
  Lander's Veterinary Toxicology, 147
  Life and Letters of Dr. Wm. Beaumont, 219
  Manual of Veterinary Clinical Pathology, 147
  Practical Dog Breeding, 148
  Veterinary Pharmacology, Materia Medica and Therapeutics, 460
  Rabbits' Ailments, 42
  Shepherd's Empire, 41
  Simple Secrets of Dog Discipline, 460
  Secretion of Milk, 460
  Stallion Road, 42
  Textbook of Biochemistry, A, 330
  Thorobred Racing and Breeding, 330
  Treasury of Horse Stories, 148
Brahman cattle exp., 432
Brain lesions, symptoms of, 260
  lesions of Dr. Ley, 151
Breeding efficiency, 301
  rings in N. Y., 117
Broilers, growth of, 43
Brucella melitensis extending, 45
  infect swine, 186
  vaccine production, 423
Brucellosis & public health, 166
  bovine, 161
  control, bovine, 122
  effect of estrus on, 446
  human, 210
  human-bovine, 111
  in dairy cattle, 205
  in female rat, 396
  in swine, 99, 122, 304
  Malta type, 81
  opsonic index in, 380
  vaccination in, 76, 381
Bull, highest priced, 156
  handling obstreperous, 150
Bulletins, list of, 114, 184, 220, 330, 414

C

Calculus, urinary, 455
Calf, a 150 pound, 254
California, swine diseases, 52
Calk wound in a horse, 180
Calves, care of, 241
  phenothiazine for, 260
Canaries, ailments of, 450
Caponization, chemical, 174
Carcinoma in a horse, 72
  of facial sinus, 142
  of the eye, 291
Carotene content of alfalfa, 45
  in grasses, 44
Case Memorial Library, 222
Castration, infection after, 74
Catarrh in cattle, 72
Cattle, amputations in, 370
  anaplasmosis in, 120, 407
  anesthesia in, 46
  arsenic poisoning in, 257
  Brahman, 432
  blackleg therapy in, 178
  black scour in, 224
  bloat in, 78
  blood transfusion in, 413
  brucellosis in, 76, 122
  brucellosis in dairy, 205
  cause of bloat in, 44
  cause of mastitis in, 379
  choke in, 78, 174, 213
  cesarean section in, 238
  color & heat resistance in, 44
  dystocia in, 177, 238
  dystocia in range, 326
  endocarditis in, 255
  excrete sex hormones, 117
  foot amputation, 455
  gastric ulcers in, 325
  gastroenteritis in, 143
  grub control, 423
  grazing acreage, 81
  hemoglobinuria in, 294
  hormone treatment in, 163
  induced lactation in, 260
  infertility in, 273
  intestinal construction, 293
  Johne's disease in, 121, 175
  keratitis in, 328
  lead poisoning in, 257
  liver abscesses in, 382
  low production of, 348
  lowered fertility in, 371
  lymphocytoma in, 254
  malignant catarrh in, 72
  mastitis control in, 190
  mastitis in, 40, 94, 120, 183, 406
  meningitis in, 293
  muscular dystrophy in, 380
  number in India, 49
  number in U. S., 81
  nymphomania in, 163
  parasites of, 123
  pericarditis in, 75, 175
  phosphorus deficiency in, 117
  potato feed for, 45
  pox treatment in, 178
  pregnancy toxemia in, 56
  productive life of, 377
  protein requirements, 300
  quarantined, Mexican, 340
  rabies in, 45
  rumenotomy in, 382
  scabies, 381
  senility in, 295
  setariasis in, 311
  splenitis in, 73
  stomatitis in, 433
  surgery in, 90
  TB prevalence in, 194
  TB reactions in, 121
  teat lacerations in, 144, 146
    surgery in, 383
  teratology, 211
  throat infection in, 75
  ticks, spray for, 57

Cattle, treatment of choke in, 78
of mastitis in, 137
trichomoniasis in, 380
unnamed disease in, 212, 453
urinary calculus in, 455
vaginal prolapse in, 109
vitamin A deficiency in, 217
Cats, pneumonia in, 444
Cavalry arm abandoned, 43
Cerbinol for cow pox, 178
uses of, 270
Cervix, a double in, 70
Cesarean section at sea, 238
Chemotherapy in dourine, 374
in rickettsiosis, 110
Chick death from salt-water, 361
Chicken—see also poultry
feather fabrics, 373
China, veterinarians for, 37
Chloral hydrate anesthesia, 47
Chloroform anesthesia, 47
Choke in cattle, 78, 174, 213
Citric acid from mold, 261
Civilian awards to veterinarians
Cotton, Dr. W. E., 334
Ferguson, Dr. T. H., 334
Grogan, Earl Wayne, May, XXVIII
Kelser, Dean R. A., 418
Levine, Isaac, April, XXII
Magrane, II, Capt. Harry Jr., June, XX
Mohler, Dr. John R., 334
Reed, Chester J., August, XX
Todd, Col. Frank, 264
Coccidiosis, course of, 375
in poultry, 86, 288
in rabbits, 320
Cold, effects on animals, 374
Colic, treatment of, 389
Colloidal iodine, uses of, 179
Community sales, 128
Conjunctivitis in dogs, 395
Corpus luteum, function of, 150
Corn tassels nutritious, 375
Corynebacterium infection, 218
Coryza in chickens, 285
Courts, peculiar, 423
Cow—see also cattle
double cervix in, 70
pox, treatment of, 178
Crippled children, number, 118
Crystal violet H-C vaccine, 161
vaccine formula, 377
vaccine use of, 259
Cystic ovaries in a bitch, 392
ovaries in a cow, 163

D

Dairy cattle practice, 240
industry, India's, 187
DDT against insect pests, 198
and rotenone, 57
cattle spray, 377
effective against lice, 128
effectiveness of, 45
eliminated in milk, 118
for cattle ticks, 57
for poultry lice, 45
increases cattle gains, 185
in dog soaps, 272
in veterinary medicine, 355
limitations & uses, 197, 356
literature, review of, 355
modified, 261
residual effect on dogs, 150
toxicity of, 197, 356
uses of, 270
Deaths in World War II, 186
in World War I, 415
Deer, tibial fracture in, 368
Diabetes in dogs, 230
mellitus, 295
Dick retires, 46
Dicoumarin in thrombosis, 115
Disease eradication value, 154
incidence unknown, 149
Diseases, discovery of, 81
of young pigs, 347
Disinfection of air, 80
Displaced eyeball, 395
Distemper, canine, 271
in mink, 113
Dog, an allergy in, 113
barley awns in, 327
baths, soap for, 252
carcinoma in a, 291
chronic endocarditis in, 405
Dog, diabetes in, 295
diaphragm, aperture in, 329, 452
disease of the eye in a, 394
enterotomy in a, 369
estrogenic sarcoma in, 106, 253
eye injury in, 211
feeding, 342
fibroid tumor in, 404
food, new source of, 373
food research, 342
furunculosis in a, 325
hormone in rickets of, 180
hematoma in, 255
histamine in urine of a, 78
inguinal hernia in, 213, 404
intestinal prolapse in a, 253
keratitis in, 453
maxilla fracture in a, 328
posterior paralysis in a, 106
rupture of jugular in a, 256
septicemia in a, 143
splenic tumor in, 176
splint for sprains in, 452
staphyloma in, 257
tendo-Achilles rupture in, 442
Dogs, breeds of Army, 79
diabetes mellitus in, 230
ear diseases in, 427
geriatrics in, 427
mammary tumors in, 427
pneumonia in, 444
rabies in, 427
vaccination required, 423
DDT for fleas on, 150
diseases of, 271
dislocated hip joints in, 214
distemper-encephalitis, 150
ear canker in, 179
effect of fluorine on, 408
encephalitis in, 301
for the Army, 268
importation of, 374
imported by "GI's," 373
mange in, 164
mixed infections in, 227
ovarian transplants in, 414
parasites in young, 367
polydactylism in, 75
posterior paralysis in, 74
pyometra in, 392
rabies in, 124, 125, 126
return with "GI's," 44
sublingual injection, 150
use of stilbestrol in, 260
Doping race horses, 435
Dry rot, 443
Drugs in 1913, favorite, 270
the newer, 337
Dystocia in range heifer, 326
Dystocias, traction in, 177

E

Ear diseases in dogs, 427
Economically important diseases, 391
Egg hatcheries, growth of, 222
Eggs, calcium content of, 222
infertility in, 222
shell quality in, 45
Encephalitis, fox, 301
on Okinawa, 297
Encephalomyelitis, anesthesia for, 413
in 1945, 261
in 1946, 416
Endocarditis in a hound, 405
in a steer, 255
Enteritis in rabbits
Enterotomy in a dog, 369
Entertoxemia in sheep, 55
Entropion and ectropion, 394
Epinephrine in anaphylaxis, 301
Equine infectious anemia, 385
Equipment, WAA surplus, 84
Error, persistence of, 85
Erysipelas, diagnosis of, 248
in swine, 122, 283
Erythrocyte counts in goats, 89
Estrogens, lactation induced by, 114
Estrus & brucellosis, 446
Ethics, violation of code of, 151
Export of animals, 162
Eye diseases in the dog, 394
foxtails in, 211

F

Far East, disease control in, 155
Federal veterinary service, 190
Femur, a fractured, 442
Ferguson in pictures, 37
Fetus, large bovine, 454
small bovine, 454
Fibrinogen, uses for, 43
Fire in K.S.C. Clinic bldg., 118
Fish, inspection of food, 337
Fleas spread typhus, 374
Fluorine intoxication, 408
Folic acid a hematonic, 44
Food hygiene, gaps in, 228
hygiene standards, 271
inspection in India, 349
Foreign body in a bull, 295
Fowl—see also poultry
cholera, 287
pox, 286
typhoid, 287
Foxes, energy needs of, 110
parasites in, 448
Fracture in a deer, 368
of premaxilla, 328
Fractures in cattle, 242
in horses, 280
Fur animals are domestic, 80
Fur-bearers, instruction on, 37
farming to USDA, 341
Furunculosis in a dog, 325

G

Gammexine, uses of, 270
Gastroenteritis due to kerosene, 143
fatal, 301
Garbage, poultry feeding, 422
Geriatrics, canine, 427
Germs, vitamins, viruses, chemotherapy, antibiosis, 297
"GI" Bill, changes in, 67
Glaucoma treatment, 340
Goats, red cell counts in, 89
Goiter, avian, 218
Gonadotropin in nymphomania, 163
Graham elected dean, 46
Grasshoppers fatal to turkeys, 457
Greece, livestock problems in, 192
Groth to research lab., 186

H

Hamsters for mink feed, 136
Hay a bloat preventive, 43
importance of quality, 375, 377
Hays, value of varies, 374
Heart, hypertrophy of, 405
Heat stroke in sheep, 55
"Heaves," source of, 301
Heifer—see cattle
Hematoma in the thorax, 255
Hemangioma, splenic, 176
Hemoglobinuria, post-partum, 294
Hen, dual purpose, 119
Hermaphrodism, equine, 291
Hernia, diaphragmatic, 329, 452
in a bitch, 213
in a dog, 404
Hexachlorobenzene (666), 115
Hints for practitioners, 150
Hip dislocation in dogs, 214
Histamine and laminitis, 199
excretion, 78
Hog cholera immunization, 259
cholera virus grown, 346
virus production, 162
Hookworms in puppies, 367
Hordeum pusillum heads, 327
Horses, anemia in, 274, 301, 385, 458
colic in, 389
encephalitis in, 297
hemoglobin in, 117
laminitis in, 199
new anesthetic for, 157
1080 poisoning, 196
removal of vocal cords, 412
setariasis in, 311
teeth of, 136
Horse, allergy in, 300
brain lesions in, 260
buying in Tibet, 58
carcinoma in, 72, 142

Horse, evolution of, 130
fatal wound in a, 180
gonad tumor in, 73
hermaphrodism in, 291
infected by castration, 74
laceration in, 296
meat, 40,000,000 lbs., 422
meat goes to UNRRA, 221
osteoma in, 142
practice, modern, 279
racing regulations, 435
Hospital—see animal hospital
Human-bovine brucellosis, 111
Hypoderma lineata, 175
Hypoglycemia of pigs, 283

I

Illinois Agricultural Ass'n., 416
Illinois Vet College faculty, 46, 116, 262, 417
Income tax, your, 30
Immunization simplified, 376
Impaction of the colon, 279
Indexing articles, 146
India's dairy industry, 187
Infectious bronchitis preventive, 375
Insecticide, a new, 151
Insecticides, new and old, 459
Insemination artificial, 242
associations, 117
in hens, 458
growth of artificial, 297
in range cows, 243
value of artificial, 117
Inspectors for poultry meat, 341
Insulin, 25th year of, 416
Interstate shipment of stock, 118
Intestinal prolapse, 253

J

Jen-Sal merges with Vick Chem., 223
Jewish university, 299
Johne's disease, 175
disease vaccination, 40
Jugular vein, rupture of, 256

K

Kelser elected dean at U. P., 46
Keratitis in the dog, 394, 453
treatment of, 328
Kilborne, credit due, 221
Korea, veterinary work in, 300
Krill, Dean at O.S.U., 116

L

Laboratory diagnosis overdone, 110
Lactation, induced by estrogen, 114, 260
Lamb, see also sheep
Lamb feeding for gains, 44
Lambs, vit. E deficiency, 457
Laminitis, 280
treatment of, 199
Laryngotracheitis, 286
Lead arsenate, teniacide, 306
arsenic poisoning, 257
Leprosy in rodents, 43
Lightning stroke diagnosis, 168
Link at Univ. of Illinois, 116
Lipoma in a pig, 369
Livestock quarantine, 303
Locker plant inspection, 228
Lowe, death of J. Payne, 37
Lymphocytoma in a cow, 254

M

Magazines, indexing, 146
Mange, benzyl benzoate for, 164
of swine, 318
Mare—see horse
Marstellar, retires, 300
Mastitis & milk fever, 406
control in Michigan, 190
incidence of, 120
in ewes, 55
genesis of, 379
inheritance in, 40
management of, 137
microscopic test for, 170
penicillin in, 94, 111, 183
predisposing factors, 379
McCallam, new chief of V.C., 46
Meat inspection, 156
inspection in B.A.I., 335
inspection in New York, 117
plants, number of, 81
prices, black market, 185
production studies, 348
uninspected increasing, 228
Medical progress, 425
Meningitis in a heifer, 293
Methyl bromide for delousing, 373
Metropryl, anesthetic, 297
Mexican border quarantine, 340
Middlesex Univ. sold, 299
Military awards to veterinarians
Bertz, Maj. Wesley, 263
Crosby, Col. J. F., 84
Dean, Col. Wm. H., 64
Derrick, Col. Jesse D., 61
Dildine, Col. Seth C., 186
Egan, Col. Harold E., 186
Fetzer, Capt. W. R., 37, 84
Greenlee, Col. C. W., 186
Haley, Maj. John S., 37
Huebner, Lt. Col. R. A., 418
Jackson, Maj. Lewis L., 37, 84
Jones, Maj. Thomas C., 418
Karr, Lt. Col. James R., 264
Kelser, Brig. Gen. R. A., 84
Kitselman, Lt. Col. C. K., 37
Lawrence, Maj. Walter A., 263
Mace, Maj. Don L., 186
Marsh, Capt. Herbert L., 84
Martin, Capt. Jerry T., 37, 84
McCallam, Col. James A., 298
McNellis, Col. Russell, 37, 186
Miller, Maj. Everett B., 84
Noonan, Col. James E., 84
Owens, Col. John L., 186
Ozier, Maj. Terry S., 186
Randall, Col. Raymond, 186
Rife, Col. George J., 186, 298
Seeley, Col. Burton A., 186
Shea, Capt. Richard, 37
Young, Col. Elmer W., 418
Milk bottle, the first, 415
fever & mastitis, 406
inspection in Montreal, 117
production of in U.S., 81, 423
Mink, distemper in, 113
energy requirements of, 110
mite, unnamed, 183
pneumonia in, 449
Monezia expansa in lambs, 306
Mule—see also horse
Mules, muted, 412
Mycocidin, new antibiotic, 151
Myopia of the fathers, 340
Myxomatosis of rabbits, 322

N

Naganol prevents surra, 297
Nail pricks, 281
Nasal catarrh of rabbits, 320
Neoplasms, mammary, 427
Newcastle disease, 124, 152, 188
disease conference, 224
disease in 15 states, 375
disease vaccine, 413
Nicotinic acid, deficiency, 162
Nitrofuran for burns, 149
Novocaine, a colic remedy, 389
Nutrition requirements, 152
views on, 245, 434, 447
Nymphomania treatment, 163

O

Oil production, fish liver, 261
Open-joint in horses, 281
Ophthmalia in rabbits, 321
Osteoma in a mule, 142.
Ovaries, transplantation of, 414
Ovary transplantation, 415
Ozier award 186, 224, 262, 299

P

Palatability factor, 422
Paralysis in a bitch, 74
research on, 412
Parasite control, 187, 270
Parasites and parasitisms, 315
conquered by research, 123
in puppies, 367
of foxes, 448
of livestock, 123
of sheep, cost of, 53
Parasiticism, diagnosis of, 398
Parturient paresis, 240
Pasteur, Louis, 424
Pathology, Institute of, 341
Peafowl, observations on, 371
Penicillin in blepharitis, 415
destruction of, 149
discovery of, 115
in black leg, 178
in equine anemia, 131
in leptospirosis, 261
in mastitis, 183, 340
in mixed infections, 227
in ophthalmitis, 221
in peanut oil, 43
in tetanus, 80, 348
painless injection of, 115
potency increased, 43
production increased, 261
spores sent China, 43
synthesis of, 297
tolerance for, 80
use in mastitis, 111
value of, 338
varieties of, 45
with $CaCo_3$, 76
wound dressing, 115
Pencillinase, effect of, 149
Pericarditis, traumatic, 75, 175
Periodic ophthmalia, 337
Pet animals, health of, 301
Phenothiazine, efficiency, 189
uses in sheep, 53
uses of, 270
Phenothiazine-salt, effect of, 301
Pigeons and public health, 81
goiter in, 218
Pig mortality, cost of, 189
Pigs, costs of, 119
diseases of young, 282
hypoglycemia in, 189
mortality of young, 189, 347
starvation in young, 189
Pitch poisoning in swine, 123
Pituitary hormones, 415
Plant poisoning in sheep, 54
Pneumonia, contagious ovine, 202
-interitis, 292
in mink, 449
verminous, 444
Poisoning in livestock, 301
"1080," 196
Poliomyelitis, vaccine in, 299
Posterior paralysis in a dog, 106
Potassium phosphate in shock, 216
Poultry, blue comb in, 459
bronchitis in, 375
coccidiosis in, 86, 124, 375
disease losses, 422
diseases, 284
dosing *per os*, 150
goiter in, 218
grasshoppers fatal to, 457
hatch in 1945, 262
income, a record, 303, 375
insemination, 458
inspectors needed, 297, 341
Malayan disease in, 259
meat inspection, 82
mortality of, 151
Newcastle disease in, 383
offal utilized, 373
pneumoencephalitis in, 124, 152, 188, 375
pneumoencephalitis vaccine, 413
practice, 284, 451
price in 1945, 150
rapid gains in, 43
salmonellosis in, 218
salt poisoning in, 361
sex hormones in, 117
stilbestrol in, 174
thiourea in, 302
use of DDT in, 45
Practice, pet animal, 427
tragedy, 366
why rush into, 104
Pregnancy toxemia in a cow, 56
Pregnant mare's urine, 79
Promin in leprosy therapy, 79
Prostigmine for spasm, 272
Protein for swine, 57
requirement of cows, 300
Pseudotuberculosis, rabbit, 321
Public health scholarships, 81
schools, 32, 81
vacancies in, 37

Public health veterinarian, 127
  veterinary contributions to, 111
Pullet disease, 459
Pullorum disease, 284
Puppies, roundworms in, 367
Pyrogens, composition of, 79
  neutralization of, 45
Pyometra in a bitch, 392

Q

"Q fever" a rickettsia, 261
Quarantine station, island, 303

R

Rabbit diseases, 319
  production, 423
  syphilis, 321
Rabbits, enteritis in, 428
Rabies and distemper, 272
  and dog industry, 374
  control of, 125
  control, S.P.C.A. in, 291
  histological diagnosis, 414
  in Colombia, 291
  in Illinois, 118
  in Venezuela, 45
  occurrence of, 272
  prevalence of, 126
  vaccine in polio, 299
  vaccine, test for, 124
Rats, cost of, 376
  livelihood of, 376
Refresher course at Cornell, 150
  course postponed, 118
Refrigeration anesthesia, 119
Reminiscences, Mayo's, 68, 171
Research, beginning of, 415
  history of federal, 81
  Society, 303
Retained placentae, 241
Rh blood factor, 43
Rickets, hormone treatment of, 180
Rickettsiosis, chemotherapy in, 110
Rinderpest, goat virus vaccine, 118
  studies on, 336
  vaccine, a new, 153
Ringworm in animals, 297
Rodenticide, "1080," 196
Rotenone uses of, 270
Rumen importance of, 348
Rumenotomy in cows, 382
Rutin in hypertension, 150

S

Salmonellosis in ducks, 218
Salt for swine, value of, 83
  poisoning in sheep, 112
  ration, important, 272
Sarcoma in a Great Dane, 106
  osteogenic, 253
Scabies in cattle, 381
Schenley research, 299
Schistocormus reflexus, 211
Scours in lambs, 306
  in pigs, 283
  teniacide for, 306
Screwworm in 1946, 151
Septicemia in a greyhound, 143
Serum, bactericidal activity, 182
Setariasis in Colombia, 311
Sheep, abortion in, 40
  acetonemia in, 54
  disease control, 259
  diseases of, 53
  feed for gains in, 44
  feeding molasses to, 44
  jaw defects in, 45
  laryngitis in, 80
  parasites of, 123, 398
  phenothiazine in, 184
  pneumonia in, 202
  poorly fed, 272
  salt poisoning in, 112
  scours in, 306
  Staphylococcus infection in, 259
  starvation in, 53
  stiff disease in, 44, 457
  tapeworms in, 306, 455
Shock, adrenalin in, 301
  refrigeration in, 119
  temperature in, 232
  treatment of, 79, 413
Skeletons, preparation of, 107
Slaughterhouse inspection, 185
Sodium chloride toxicity, 361
  fluoride dosage, 150
  fluoride for roundworms, 160
  fluoride use of, 270
  fluoroacetate (1080), 196
Soybean meal for poultry, 185
Splenitis in a cow, 73
Splint for fractured femur, 452
Sponges from starch, 43
Spray, poisoning by orchard, 457
Squabs, favored breeds of, 415
Staphyloma in a dog, 257
Sterility in cattle, 273
Stilbestrol for desexing, 174
  in dogs, 260
Stock "1037," 340
Stomach tube, passing, 409
Stomatitis in cattle, 433
Streptococcic infections, 218
Streptomycin, absorption of, 457
  blood levels, 149, 457
  clinical use of, 421
  in infections, 339
  in tularemia, 115, 261
  obtainable, 185
  potency of, 373
  production of, 421
  stable, 244, 340
  use restricted, 244
  value of, 80
Streptothricin, effect of, 80
Strongylosis, pulmonary, 317
Sulfonamides, tolerance for, 415
Surgery, abdominal, 422
Sweet-potato vine hay, 377
Swine, abortion in, 99
  breed better, 191
  brucellosis control, 304
  brucellosis in, 122
  costs of breeding, 119
  disease control, 52
  disease prevalence, 123
  diseases of young, 347
  enteritis in, 128
  erysipelas, 122, 248
  H-C vaccination, 259
  increased fecundity in, 422
  lead arsenate in, 306
  lipoma in, 369
  loss of young, 189, 282
  paralysis in, 412
  parasites of, 124, 315
  pitch poisoning, 123
  pneumoenteritis in, 215, 292
  ration, salt in, 83
  require salt, 377
  salt for, 81
  thiourea in, 302
  treatment of lice in, 128
  tolerance for arsenic, 457
  vegetable protein for, 51
Sulfa drugs in coccidiosis, 86
  drugs aided by dyes, 45
Sulfaguanidine in coccidiosis, 124
Sulfamerazine, 338
Sulfonamides, 338
Sunburn preventive, 80
Supernumary toe in spaniel, 75
Surra prophylaxis, 297
Surgery, bovine, 90

T

Tax, how to compute, 30
Teat lacerations, 144
  operations, 146
  surgery in cows, 383
Teeth, adaptation of, 136
Teniacide, lead arsenate, 306
Telangiectasia, 382
Tendo-Achilles rupture of, 442
Teniasis in lambs, 306, 455
Testicular tumor, equine, 73
Thenardol, antiseptic, 297
Therapy, progress in, 297
Thiamin, inactivation of, 221
Thiourea toxicity of, 302
Throat infection in cattle, 75
Tibet experiences in, 58
Tick repellent, new, 340
Torsion of the uterus, 242
Tridione in epilepsy, 79
Trichinosis, control of, 181
  in California, 422
Trichomoniasis vaccination, 380
Trypanosoma research, 415
Trypanosomiasis, 217, 374
Tuberculin reactions, 121
  testing, insufficient, 121
Tuberculosis, diagnosis of, 194
TB eradication predicted in 1906, 244
Tularemia of rabbits, 322
  streptomycin in, 261
Tumor in a chow, fibroid, 404
Turkeys, "blue black" in, 423
  grasshoppers kill, 457
Tympanites of the rumen, 78
Tyrothricin, for wounds, 57

U

Ulcers in abomasum, 325
Undulant fever in Iowa, 151
  fever, melitensis, 81
  fever, prevalence, 181, 210
UNRRA livestock problems, 192
  purchases horse meat, 221
  reports anthrax, 191
Urine burn in rabbits, 322
  value of mare's, 79
Uterus, torsion of, 242
U.S. Livestock S. Ass'n., 120

V

Vaccination against brucellosis, 377
Vagina, prolapse of, 109
Vas deferens constriction, 293
Vesicol 1068 insecticide, 151
Veterinarian and prosperity, 67
  public health, 127
  substitute for, 226
Veterinarian's conference, AAF, 266
  distribution of, 265
Veterinarian's experiences in Greece, 192
  experiences in India, 349
  experiences in Oklahoma, 326
  experiences in the Philippines, 233
  experiences in Tibet, 58
  experiences with UNRRA, 238
Veterinarians in public health, 81, 127
  in World War II, 33
  needed in China, 37
  needed for meat inspection, 103
Veterinary achievements, 111, 190, 264, 267, 269
  appointments, Army, 419
  conferences, 232
  contribution to public health, 165
  equipment, surplus, 84
  experiences in New Calidonia, 102
  experiences in Europe, 158
  experiences in Italy, 126
  graduate instruction, 149
  Hq., Air Service, 44
  medicine in Europe, 336
  medicine in Japan, 335
  officers discharge criteria lowered, 268
  officers discharged, 38, 129, 155, 225, 298, 378, 419
  officers needed, 266, 420
  practice, Baker's, 250, 289, 323, 364, 410, 461
  refresher course, 39, 150
  research, Japanese, 336
  research training, 149
  sanitary problems with air transport, 337
  science and reconversion, 79
  Secretariat, 155
  service depicted, 267
  service, federal, 190
  service increases food, 375
  service in New Caledonia, 102
  service overseas, Army, 102
  service R.A.V.C., 269
  service to public health, 165
Virus disease of fowl, 259
  of H.C. grown in vitro, 346
  pneumonia in sheep, 202
  propagation, 373
Viruses crystallizable, 149
  origin of, 421
Vital statistics, collection of, 128
  statistics long sought, 182
  statistics needed, 149
Vitality, suspended, 373
Vitamin A deficiency, 85, 217
  A potency of butter, 113
  A synthesized, 115
Vitamin B deficiencies, 301

Vitamin C deficiency, 149
C in wound healing, 140
C source of, 149
Vitamin E and muscular dystrophy, 457
Vitamins, 246
and longevity, 423

W

War unending, the, 186
Warbles in esophagus, 175
Warming bottle, 443
Water buffalo, retained placentae, 260
Watson, Maj. E. J., deceased, 263
Weed killer, 2, 4-D, 119
What causes my dog to itch? 331
White muscle disease, 380
Whooping cough antiserum, 373
Wight retires from B.A.I., 222
Wire wounds, 281
Wood ticks, habitat of, 224
World War II veterinarians, 33
Wound healing, vitamin C in, 140
Wound treatment, 57

X

Xanthomatosis in dogs, 458
"X" disease, 212

Index of Names

AN ASTERISK (*) SIGNIFIES A HALFTONE

A

Ackerman, E. B., 69
Adams, G. B., 213
Adams, Howard, 454
Adler, E. L., 292
Ahrendes, A. H., 74
Allen, John K., 67*
Allison, A. F., 266*
Alvarez, G., 453
Alvarez, J. G., 291, 311, 446
Anderson, E. T., 158
Anderson, W. A., 302
Appleton, Wayne, 73
Arlington, Helene, 220
Ascoli, A. A., 396, 446
Asdell, S. A., 457
Ashe, Harold, 30
Aurep, G. V., 78
Austin, A. C., 454
Ayadi, M. S., 78

B

Bachrach, Alan, 24
Baker, Donald W., 381
Baker, Douglas, 13
Baker, E. T., 104, 250, 289, 323, 364, 410
Barrett, S. L., 116*
Barsoum, G. S., 78
Barsky, David, 16
Barta, J. C., 266*
Bartlett, J. W., 40
Bayles, G. W., 175
Beach, B. A., 182
Beach, J. R., 383
Beaudette, F. R., 124, 383
Belford, Chas., 454
Bell, J. E. 272
Benbrook, E. A., 187
Benning, H. M., 181
Berrier, H. H., 109
Bertz, W. W., 263
Beuschel, L. L., 254
Birch, R. R., 76, 381
Bird, H. R., 222
Black, J. J., 124
Blood, B. D., 44, 266,* 337
Bloom, Frank, 458
Blount, W. P., 42
Boddie, G. F.,
Boebel, F. W., 196
Boulay, Henri, 425
Boynton, W. H., 120, 233, 234,* 346
Brandenburg, T. O., 165
Bridges, B. C., 64
Brion, A., 389
Brooks, E. I., 294
Brueckner, A. L., 125
Bruford, J. W., 260
Bryan, A. H., 218, 259, 260
Bryan, C. S., 94, 147, 191, 418, 429
Bueno, P., 412
Buffin, K. E., 66
Bulletins, list of, 114, 148, 184, 220, 330, 414, 459
Burnet, F. M., 421
Burnham, R. A., 176
Burr, James H., 329
Burson, W. M., 75

C

Campbell, G. A., 272
Carbone, M. G., 174
Capron, Horace, 85
Carey, J. C., 240, 279
Carlson, A. J., 272, 305, 416, 443
Carlson, F. N., 306
Carlson, K. C., 107
Carniglia, F. J., 435
Case, C. H., 222*
Chaddock, T. T., 449
Chavance, Jean, 199
Coffin, D. L., 147
Collen, M. F., 76
Cooper, John, 10
Cotton, W. E., 77, 234*
Cowherd, C. M., 266*
Craige, A. H., 379
Crawford, Dale, 257
Cruse, C. L., 215
Cressman, Audrey, 182
Cunkleman, J. W., 94

D

Dack, G. N., 418
Dalrymple, W. H., 172*
Dalziel, Ted, 455
Danks, A. G., 217
Davidson, J. LaVere, 164
Davies, A. A., 177, 180, 292
Dean, W. H., 64*
DeCamp, D. E., 427
Derrick, Jesse D., 337
Desmond, T. C., 117
DeWitt, J. C., 178
Dick, G. A., 46*
Dills, C. R., 233
Dixon, Oness, 335
Doll, E. R., 361
Donham, C. R., 265
Doyle, T. M., 40
Dunphy, J. E., 413
Dunham, N. F., 455
Dykstra, L. A., 381

E

Edgington, B. H., 149
Ellingson, H. V., 421
Ellis, R. W., 69
Elting, A. W., 72
English, Burt, 453
Erglard, Reid, 256
Erickson, A. E., 26
Eveleth, D. F., 398

F

Fabricant, J., 86
Farquharson, James, 47,* 93, 333,* 335
Feldman, W. H., 121, 338
Fedorov, A. I., 458
Fellman, C. K., 329
Ferguson, T. A., 37, 334*
Fernstermacher, R., 123
Fidler, C. E., 126
Fincham, I. H., 260
Fincher, M. G., 217
Fish, P. A., 172,* 270
Fishbein, Morris, 157
Fitch, W. H., 377
Foster, A. O., 367
Foster, R. J., 62*
Fowler, Geo. R., 90
Frank, E. R., 92
Frey, Paul R., 382
Frick, E. J., 196
Friedman, S. S., 238
Furgeson, H. E., 155

G

Garlick, N. L., 183
Gassner, F. X., 117
Gearhart, F. C., 233
Gibbons, W. J., 217
Gilman, H. L., 76, 339
Givens, H. C., 68
Gleeson, L. N., 442
Goetsch, G. D., 142
Goldsby, Alice I., 398
Goldsmit, L., 413
Goodpasture, E. W., 373
Gottlieb, Julius, 294
Gouchenour, W. S., 37
Gould, G. N., 78
Gould, S. E., 181
Grachwohl, R. B. H., 219
Graham, B. E., 457, 458
Graham, G. G., 223
Graham, Robt., 46*
Green, Dwight H., 375
Green, Robt. G., 113
Greer, Chas, S., 66
Grissam, G. J., 453
Groth, A. H., 186
Groves, Kermit, 457
Gunn, C. K., 448
Guyton, F. E., 197

H

Habermann, R. T., 306
Hadder, M. J., 254
Hagan, W. A., 233,* 301
Hagedoorn, A. L., 332
Haggard, J. M., 319
Haigler, S. W., 227, 394
Hall, E. A., 174
Hall, F. A., 383
Hand, P. H., 20
Hansen, H. E., 19
Harden, Florence, 111
Hardin, R., 255
Haring, C. M., 69
Harold, LaVerne, 106
Hastings, C. C., 245
Haubrich, L. R., 178, 454
Hayden, C. E., 217
Hayward, A. H. S., 260
Herzog, E., 414
Hill, N. P., 385
Hitchner, S. B., 417*
Hodson, A. Z., 110
Hollander, W. F., 218
Holm, Glenn C., 122, 304, 305*
Howell, D. E., 407
Hourney, H. E., 217
Houston, W. H., 66
Hubbard, Earl D., 168
Huebner, R. A., 418
Huddleston, I. F., 182, 210
Hughes, Joseph, 68
Hull, F. E., 53, 361
Hull, Maurice, 109
Hurt, L. M., 52
Hutchings, L. M., 99

I

Insko, W. M., 361
Irwin, M. R., 182

J

Jacobson, David, 327
Jensen, C. G., 392
Jensen, L. D., 418
Jeppesen, Q., 144
Johnson, H. N., 124
Jacobson, H. W., 75, 121, 391
Johnson, Marvin, 368
Johnson, R. W., 413
Johnson, S. D., 379
Jones, T. C., 337
Jordan, Carl F., 151
Joss, G. E., 164

K

Kaplan, M. M., 191, 192
Karlson, A. G., 339
Kelly, E. G., 185
Kelman, A. C., 339
Kelser, R. A., 46,* 61, 233, 234, 418
Kernkamp, H. C. H., 123, 248, 315, 347
Kester, W. O., 267
Kilborne, F. L., 221, 233
Kimball, P. A., 74, 180
Kimball, P. E., 212
Kiper, Ralph O., 14
Kirk, Norman T., 151
Kirkpatrick, F. K., 110
Komarov, A., 413
Kromminga, M. C., 407
König, J., 185
Koon, Geo. H., 63*
Kretzer, D. C., 237
Krill, W. R., 265
Krill, W. R., 116*
Kubin, Rosa, 89
Kuizenga, M. H., 457, 458
Kutz, H. C., 194

L

Lager, Arthur, 89
Leach, B. F., 265*
Learned, Marion, 86
Lee, A. M., 40
Lee, F. M., 61
Leffingwell, Georgia, 148
Legrow, W. Ralph, 380
Leininger, D. B., 63*
Lepard, O. L., 40
Lesser, Milton, 148
Lerche, M., 218
Levine, Isaac, 404
Lindley, W. H., 258
Lindsey, P. J., 293
Link, Roger P., 116*
Litt, Robt. P., 256
Lloyd, K. E., 146
Lockhart, Ashe, 68
Loder, Geo. D., 349, 350*
Longstreet, Stephen, 42
Love, C. A., 143
Loosli, J. K., 457
Lovell, R., 218
Lush, Jay L., 220
Lustig, Seymour, 102

M

Madson, R. M., 236
Marsh, Hadley, 184
Marstellar, R. P., 300
Maxfield, A. L., 326
Mayo, N. S., 68
Mayo, N. S., 171
McAuliff, J. L., 337
McCallam, J. A., 46, 335
McCullough, E. C., 457
McDiarmid, A., 259
McGown, M. N., 255
McIntyre, J. C., 266*
Merchant, I. A., 338
Merillat, L. A., 33
Metzger, H. J., 396
Millen, T. W., 417*
Miller, C. L., 180
Mitchell, Philip H., 330
Moberly, David, 233
Mohler, John R., 173,* 334*
Molitov, Hans, 340
Moore, E. C., 382
Moore, G. R., 163
Morcos, Laki, 202
Moreno, G. D., 113
Morgan, B. B., 380
Morrill, C. C., 122
Morrill, J. L., 265
Morrison, F. B., 457
Morrison, G. A., 294
Mosier, J. E.,
Mostyn, H. J., 113, 216, 409
Mott, L. O., 131, 274, 385
Moule, G. R., 112
Murmane, D. A., 183
Murphy, J. M., 40, 120, 379
Murphy, Rofin, 340
Myer, Jesse S., 219

N

Nagakura, Roy, 406
Narusu, V., 450
Nesom, G. E., 233
Nichols, Robert, 150
Nicholson, J. A., 147
Nighbert, E. M., 232
Nye, Elwood L., 65

O

Ogilvie, H., 421
Olafson, Peter, 457
Olson, J. R., 72
Orr, John K. T., 259
Orr, W., 259
Ozler, Terry S., 186, 224, 262, 299

P

Packer, R. A., 338
Palmer, L. R., 22, 252, 443
Parent, J. X., 137
Parker, J. E., 458
Parker, Manfred, 175, 178
Pasteur, Louis, 424
Paul, Ed. M., 12
Payne, L. C., 372
Peake, Harry C., 148
Peck, Lyman, 52
Pfau, K. O., 40
Pigman, E. G., 175
Plastridge, W. N., 380
Poelmo, L. J., 426

Q

Quortrup, E. R., 238

R

Rainey, J. W., 56
Ramsey, Mott, 64
Rea, H. Calvin, 15
Rebrassler, R. E., 124, 270
Reddin, Lester, 300
Richter, C. P., 302
Riddle, Oscar, 218
Ridgeway, J. J., 452
Ridgway, Joe, 211
Riegg, A., 143
Riser, Wayne, 427
Roberts, S. J., 217
Robinson, H. E., 342
Roby, T. O., 337
Rodler, E. A., 234
Rowlands, W. T., 259
Runnels, L. J., 296
Rushmore, R. W., 126
Russell, F. C., 301
Russo, Raymond, 230
Ryff, J. F., 40

S

Salmon, D. E., 233
Sampson, Jesse, 189, 282
Scarr, D. N., 325
Schalm, O. W., 111
Schmoker, E. A., 330
Schnelle, G. B., 427
Schoening, H. W., 126
Schreck, Horst, 1, 7,* 28
Schroder, C. R., 128
Schwartz, Benj., 123
Seeger, K. C., 124
Seeger, Victor P., 76
Seghetti, Lee, 184
Self, Margaret C., 148
Seymour, R. T., 155
Shea, Richard A., 58
Shope, Richard E., 336
Silvester, P. B., 214
Simms, B. T., 224, 233,* 377, 416
Simon, Joseph, 291
Sinclair, Luke R., 368
Smith, G. O., 454
Smith, H. C., 371, 407
Smith, Jean C., 70
Smith, J. R., 78
Smith, S. E., 110
Smith, Theobald, 221, 376
Smythe, R. H., 260
Souza, Paula, 32
Spangler, G. W., 295
Spriggs, D. N., 114, 260
Squibb, Robt. L., 57
Stafseth, H. J., 37
St. Clair, L. E., 262*
Steele, Floyd, 75
Steele, James, 127
Stein, C. D., 131, 274, 385
Stein, S. H., 415
St. John, J. L., 457
Stephenson, H. C., 39, 150
Stevens, John S., 18
Stever, D. W., 300
Stewart, C. M., 412
Stewart, S. L., 205
Stoll, I. V., 379
Stone, W. S., 76
Strakosh, Richard, 78
Strong, Howard, 416
Sugg, R. E., 265
Sulkin, S. E., 413
Sutton, T. S., 426
Swales, W. E., 338, 375

T

Tableman, H. C., 216, 456
Theobald, W., 328
Thies, W. M., 15
Thompson, C. H., 370
Thompson, J. A., 233
Thompson, M. W., 41
Thorp, W. T. S., 86, 338
Todd, Frank A., 336
Towne, C. W., 41
Trotter, D. M., 405
Turk, R. D., 301

U

Udall, D. H., 301
Underwood, Tom, 330
Ungles, James M., 243

V

Vanattieri, E., 260
Vanderbrook, M. J., 457
Van Houweling, C. D., 416
Vawter, L. R., 380
Vincent, Wendell, 228, 271
Vine, L. L., 295, 444
Visger, E. E., 94

W

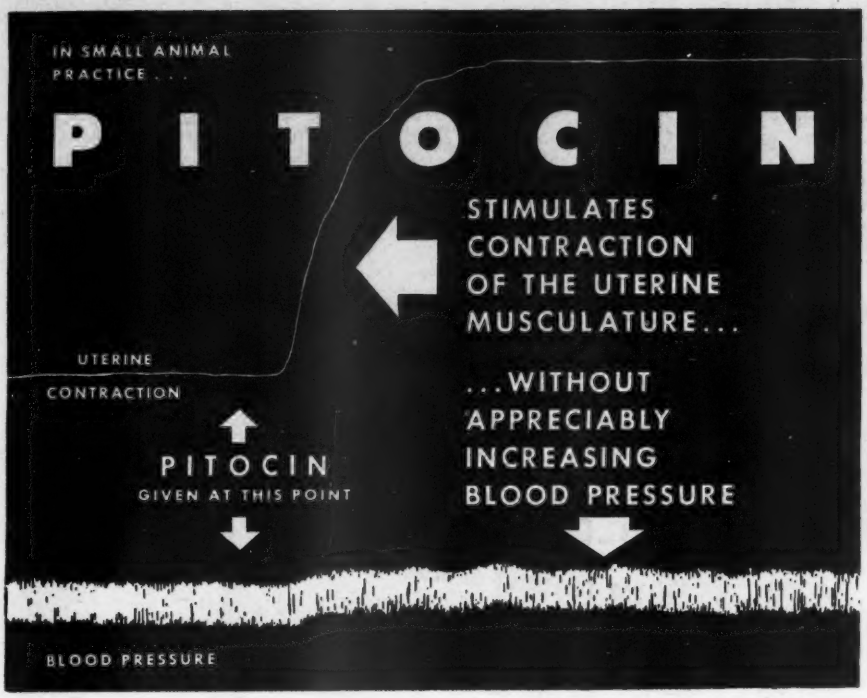
Waksman, S. A., 421
Walstrom, Veryl, 253
Ward, A. R., 233
Waters, Fred C., 65*
Watson, E. J., 263
Watson, Harry L., 65*
Watts, R. E., 417*
Wentworth, E. N., 41
Westerfield, Clifford, 355
West, R. L., 426
Whitney, Leon F., 414
Wickware, A. B., 457
Wight, A. E., 122, 222*
Williams, R. C., 370
Williams, W. L., 72, 301
Willman, J. P., 457
Wilson, J. E., 218
Wilson, W., 146
Winter, H. J., 409
Winter, J. H., 178, 328
Winters, Asa, 122
Wood, Evelyn, 182
Woodbridge, John, 369
Woodruff, F. H., 66*
Worthy, L. C., 11
Wright, T. L., 260

Y

Young, E. N., 418
Young, F. W., 94
Youngberg, Stanton, 233

Z

Zaki, Osman A., 202
Zaki, Ragheb, 202
Zeissig, Alex, 121, 427


IN SMALL ANIMAL PRACTICE . . .
PITOCIN
STIMULATES CONTRACTION OF THE UTERINE MUSCULATURE . . .
. . . WITHOUT APPRECIABLY INCREASING BLOOD PRESSURE
UTERINE CONTRACTION
PITOCIN GIVEN AT THIS POINT
BLOOD PRESSURE

An aqueous solution of the oxytocic principle of the posterior pituitary—with practically none of the pressor principle—PITOCIN is a superior product for labor cases in which stimulation of the uterine musculature is indicated.

Pitocin is also useful in the prevention of postpartum hemorrhage and is especially valuable when a rise in blood pressure is contraindicated.

Its low protein content and freedom from impurities minimize the incidence of unfavorable reactions . . . making Pitocin the oxytocic of choice with many veterinarians.

Pitocin (alpha-hypophamine) is available in ampoules of 5 units (0.5 cc.) and 10 units (1 cc.), in boxes of 6, 25, and 100.

Parke, Davis & Company
DETROIT 32 · MICHIGAN

White's

AnD-OLENE OINTMENT

FOR TREATMENT OF SLOW HEALING WOUNDS

White's AnD-OLENE OINTMENT, a new analgesic veterinary preparation, is intended for the treatment of slow healing wounds. It is recommended for chronic ulcerations, crushed and torn soft tissue, open surgical wounds, chapped or fissured teats, rope burns and skin abrasions.

PROMOTES CELL GRANULATION AND EPITHELIZATION

White's AnD-OLENE OINTMENT is designed to promote cell granulation and epithelization. Contains natural vitamins A and D (in the form of high potency fish liver oils) and Chlorobutanol. Soothing . . . non-irritating . . . covers exposed sensory nerve endings with an oily film. The water soluble ointment base permits rapid absorption.

Clinical research shows that vitamins A and D, when used in the treatment of burns and slow healing wounds, stimulate renewed cell activity. The oil layer formed by this preparation prevents gauze from adhering to the burns or wounds, thus permitting the building up of a pliable elastic granulation.

CONVENIENTLY PACKAGED

White's AnD-OLENE OINTMENT is available in 1½ oz. and 5 oz. dispensing tubes with dual prescribing labels. Also in 1 lb. jars for hospital use.

Your Veterinary Wholesaler can supply you with White's Veterinary Specialties. If he does not have White's AnD-OLENE OINTMENT, order direct.

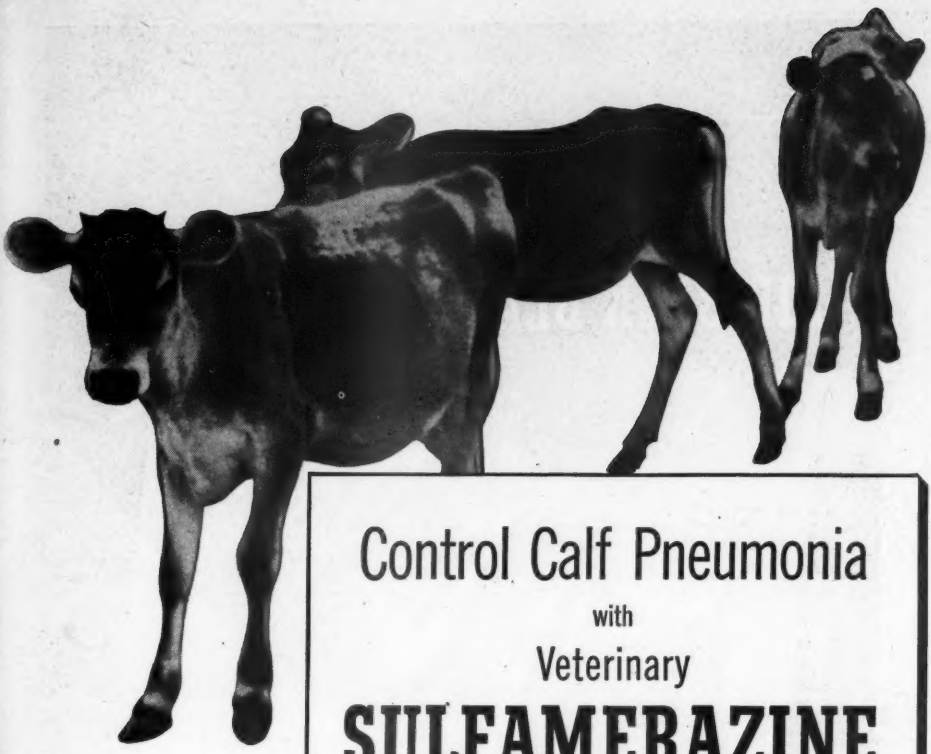
Descriptive literature on request.

ETHICALLY PROMOTED—NOT ADVERTISED TO THE LAITY

VETERINARY DIVISION

White Laboratories, Inc.

NEWARK 7, NEW JERSEY, U. S. A.



Control Calf Pneumonia

with

Veterinary

SULFAMERAZINE

Powder, S & D

CALF PNEUMONIA—a frequent problem for the veterinarian during the winter months—may be treated effectively with Veterinary Sulfamerazine Powder, Sharp & Dohme.

In field studies*, this sulfonamide demonstrated its effectiveness by the recovery of 88 per cent of the animals treated. No toxic effects were noted.

Compared with other sulfonamides, Sulfamerazine is more rapidly and completely absorbed from the gastrointestinal tract and more slowly excreted by the kidneys. Thus a higher therapeutic blood level is more readily maintained than with other sulfonamides in comparable doses; frequently, only *single* daily doses of Sulfamerazine are required. In calf pneumonia the initial daily dose is usually one grain per pound of body weight.

Veterinary Sulfamerazine Powder is also indicated in the treatment of pneumonia and certain bacterial infections in cattle, swine, horses, dogs and cats. It is effective in cecal coccidiosis and pullorum disease in poultry.

Veterinary Sulfamerazine Powder, Sharp & Dohme, is supplied as follows: No. 2263—In ¼-lb. and 1-lb. bottles.

*Thorp, W. T. S., J. Am. Vet. M. A. 106:75, Feb. 1945.

VETERINARY DIVISION SHARP & DOHME **PHILADELPHIA 1, PENNA.**

The Edge on them all . . .

RIB-BACK BLADES

Exclusively featuring a seamless Rib reinforcement which adds greater strength to the blade and a desired degree of rigidity sufficient to resist lateral pressure . . . a manipulative aid to the surgeon in the entire surgical category.

Of greater import,—uniform cutting superiority . . . symmetry in precisioned steel. Superior sharpness, the progeny of ingenious fabrication methods and inspection control which created a new standard of surgical blade performance that serves the surgeon to even greater advantage. In Rib-Back Blades a more dependable cutting edge was born . . . the edge on them all.

Ask your dealer

BARD-PARKER COMPANY, INC.

DANBURY, CONNECTICUT

A BARD-PARKER PRODUCT

Balance—

• It's no easy stunt to balance your dogs' diet. Balanced nutrition must provide all known necessary elements—more than 30 factors—and in the right proportions.

You can't give full time to feeding problems; but GAINES' top-notch scientists and laboratories do. They make sure that GAINES provides dependable amounts of all the food elements dogs are known to need.

Yes, a balanced diet for your dogs is as easy as feeding GAINES. You can count on GAINES to nourish every inch of a dog. *Gaines Food Co., Inc., Sherburne, N. Y.*

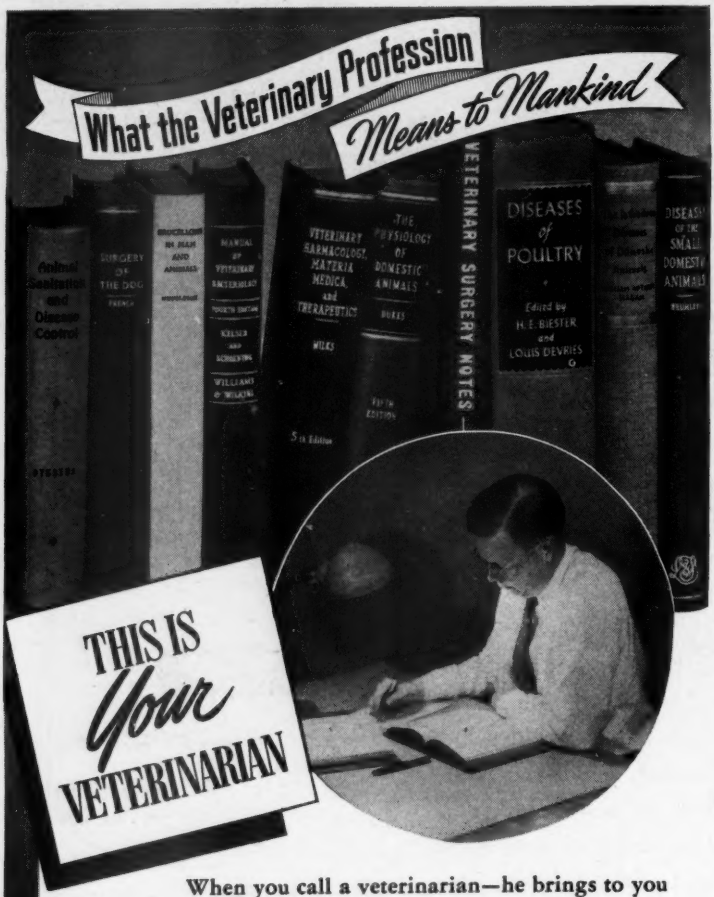
America's Leading Brand Among Breeders

GAINES DOG FOODS

MEAL •

"Nourish Every Inch of a Dog"

• KRUNCHON


What the Veterinary Profession Means to Mankind
VETERINARY SURGERY NOTES
DISEASES of POULTRY
Edited by H. E. BIESTER and LOUIS DEVRIES
THIS IS Your VETERINARIAN

When you call a veterinarian—he brings to you the knowledge and skill of one of the world's most highly-trained professions. To graduate in this profession he must spend 5 to 6 years in specialized studies—not only of the basic sciences, but also in the specific subjects dealing with animal health and diseases. This technically-trained servant of the livestock industry, with the close cooperation of progressive farmers, has made this nation the most healthful place in the world for profitable livestock production.

AMERICAN FOUNDATION FOR ANIMAL HEALTH

UNDER THE SPONSORSHIP OF ASSOCIATED SERUM PRODUCERS, INC.

THIS MESSAGE

is appearing in 24 leading farm magazines this month, sponsored by

ASSOCIATED SERUM PRODUCERS

★

MEMBER COMPANIES

Allied Laboratories, Inc.
Blue Cross Serum Co.
Corn Belt Laboratories, Inc.
Fort Dodge Laboratories, Inc.
Grain Belt Supply Co.
Jensen-Salsbery Laboratories, Inc.
Liberty Laboratories
Missouri Valley Serum Co.
Norden Laboratories
Pitman-Moore Co.
Sioux City Serum Co.
Sioux Falls Serum Co.
The Columbus Serum Co.
The Corn States Serum Co.
The Gregory Laboratory
The National Laboratories Corp.
The Royal Serum Co.
The Southwestern Serum Co.
The United Serum Co.

"The pennyroyal bull on the hill
Makes merry with his lowing
The lonely heifers in the valley."

Pennyroyal, a weed of the mint family, was once thought to have an ability to stimulate sexual excitement in animals grazing in fields where it grew.

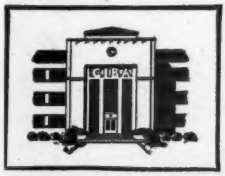
Today sexually impotent bulls may be treated with

PERANDREN

... most potent androgen.

Injections of 50 mg. of Perandren twice weekly will, in most instances, put an impotent bull back in "service."

AVAILABLE in ampuls 1 cc. and vials (rubber-capped) 10 cc. Solutions of 5 mg., 10 mg. and 25 mg. per cc.



CIBA PHARMACEUTICAL PRODUCTS, INC.
SUMMIT, NEW JERSEY

Sole Agents

GOSHEN
LABORATORIES, INC.
GOSHEN, N. Y.

DEPENDABLE

FORT DODGE
500 cc.
BISULDEX
STERILE
For Veterinary Use by Graduate Veterinarians Only
COMPOSITION
Sodium Sulfathiazole 3½%
Sodium Sulfapyridine 2½%
Dextrose C. P. 5%
1/6 M. Sodium Lactate q.s.
Orthophenylphenol 1/1000 (preservative)
SUGGESTED DOSAGE: Swine: 1 cc. per pound of body weight injected intraperitoneally at one time. May also be used intravenously in which case the injection should be made slowly (5 to 10 cc. per minute). Do not repeat. Cattle and Horses: ½ cc. per pound of bodyweight. Repeat if indicated. Inject slowly intravenously.
FORT DODGE LABORATORIES, Inc.
Fort Dodge, Iowa
Made in U.S.A.

A valuable "sulfa" treatment for the pneumonia-enteritis complex in swine, as well as in "shipping fever" in cattle.

FORT DODGE

FORT DODGE LABORATORIES, INC. • FORT DODGE, IOWA

New! Helpful, Readable Dog Book!

40 pages . . .
38 color illustrations

A FREE Supply for Your "Christmas Puppy" Clients!

1. *Five chapters on the care, feeding, and training of dogs—including a section on the importance of veterinary care.*
2. *A special chapter on "Tricks" written by a famous trainer—Jack Baird.*
3. *A "Breed" section, giving interesting and unusual information on 22 of the most popular breeds.*

Send us your name and address and we will send you 10 free copies. Write us if you need more—they will be sent without any obligation on your part. Mail the coupon today!

KELLOGG COMPANY
Makers of
Gro-Pup Ribbon . . . Gro-Pup Meal . . . Gro-Pup Pel-Ets

THIS is the season when new dog owners bear down on veterinarians with every question they can think of! Save yourself a world of trouble—give them a copy of "Your Dog," prepared for your convenience by the makers of Gro-Pup.

"Your Dog" answers a hundred questions on the care, feeding, and training of dogs! It's practical . . . authoritative—you need only glance through it to see how much it will help—and delight—your "Christmas Puppy" clients!

KELLOGG COMPANY
Dept. VM 612
Battle Creek, Mich.

Gentlemen:
Please send me 10 free copies of the new "Your Dog" book.

NAME.....

ADDRESS.....

CITY.....STATE.....

New! Proven! DISTEMPER TREATMENT

Extensive research and clinical trials have proven the value of Distemperoid for the treatment of early distemper. The action is brought about by "virus interference," also known as "cell block."

Send for literature immediately so that you may be among the first to take advantage of this startling, important advance in distemper therapy.

DISTEMPEROID VIRUS

(CANINE DISTEMPER VACCINE • FERRET ORIGIN • GREEN METHOD)

The live nonpathogenic virus which also produces rapid immunity in dogs by only one injection.

Price reduction of Distemperoid Virus

The acceptance of Distemperoid has been so phenomenal that volume production economies have been possible. These are passed on to you.

1. The milligram content per vial has been nearly doubled. Each ampul now contains 25 mg. of Distemperoid Vaccine instead of 15 mg.

2. The price of each ampul in boxes of 10 is now only $2.00; single ampul $2.25. Boxes of 5 have been discontinued.

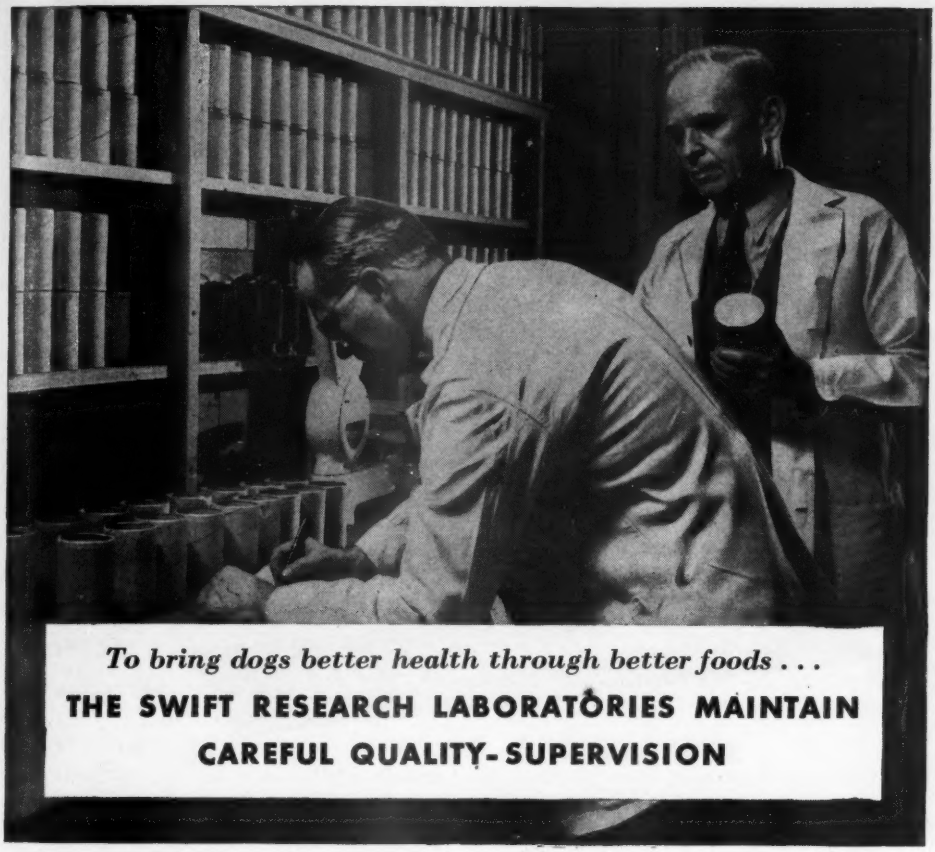
With this "one visit" distemper prophylaxis or treatment with "Distemperoid" (the Biologic of choice), your distemper control will cost you less and satisfy your clients more.

Sold only to Graduate Veterinarians

Manufactured by
FROMM LABORATORIES, INC.
GRAFTON, WISCONSIN

Winthrop **CHEMICAL COMPANY, INC.** *Exclusive Distributors*

Pharmaceuticals of merit for the veterinarian **170 Varick Street, New York 13, N. Y.**



To bring dogs better health through better foods . . .

THE SWIFT RESEARCH LABORATORIES MAINTAIN CAREFUL QUALITY-SUPERVISION

● You can feed Pard to dogs day in and day out confident of *uniformity*, in nutrient content, taste, color, odor, and texture.

This promise of unvarying quality is safeguarded by the Quality Control Division of the Swift Research Laboratories. Samples of Pard taken from the manufacturing line at 30 minute intervals are checked by exacting specialists for conformation to a set of rigid standards. Nutritional quality of Pard is also checked by feeding to dogs.

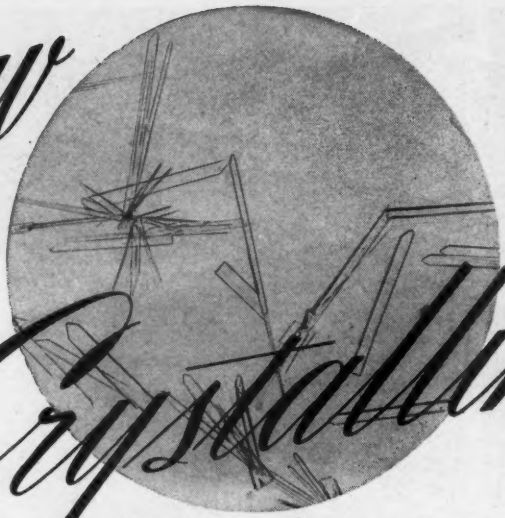
A laboratory with fine traditions, modern technical equipment, and over 50 years of food research—*all* these combine to insure better health for dogs through better food. Yes, dogs can be fed Pard with supreme confidence.

Pard is an easy-to-feed nourishing food—appealing to canine appetites from the start and proved by generation feeding tests.

Swift & Company · · · CHICAGO

The Pard formula is rich and appetizing and includes wholesome foods dogs need . . . a well-balanced formula, rigidly adhered to and nutritionally excellent. Pard contains every essential for good nutritional health.

Now Crystalline PENICILLIN-C.S.C.



for Veterinary Use

Crystalline penicillin until recently a laboratory curiosity is now available for veterinary use. As a result of special processes of purification and crystallization, all Penicillin-C.S.C. is now supplied in the form of the highly purified, heat-stable Crystalline Sodium Salt of Penicillin-C.S.C.

In the crystalline state Penicillin-C.S.C. offers many advantages which merit the veterinarian's preference whenever penicillin is indicated.

No Refrigeration Required

Crystalline Penicillin-C.S.C. is so heat-stable that it can be kept at room temperature, virtually indefinitely without losing its potency.* It can now be carried in the veterinarian's bag or stored in his office without danger of deterioration.

Optimal Therapeutic Activity

Because of its high potency per milligram, Crystalline Penicillin-C.S.C. exerts optimal therapeutic activity. A recent report shows the advantage of highly potent preparations (Trumper, M., and Thompson, G.J., J.A.M.A. *130:*628 [March 9] 1946).

Potency Clearly Stated on Label

The high state of purification achieved in Crystalline Penicillin-C.S.C. is indicated by *its high potency*. The number of units per milligram is stated on each vial, thus enabling the veterinarian to know the degree of purification of the penicillin he is using.

Crystalline Penicillin-C.S.C. for veterinary use is available in serum-type vials containing 100,000 or 200,000 units. Sold through veterinary supply houses.

*CAUTION: Once in solution, however, penicillin requires refrigeration.

ACCEPTED AMERICAN MEDICAL ASSN.

Penicillin-C. S. C. is accepted by the Council on Pharmacy and Chemistry of the American Medical Association.

AGRICULTURAL DIVISION

COMMERCIAL SOLVENTS

Terre Haute *Corporation* Indiana

CSC

NOVOXIL OINTMENT

an active colloidal silver oxide ointment

penetrates tissue effectively . . . maintains sustained antiseptic action

To promote active dispersion throughout infected areas, the silver oxide particles in Squibb Novoxil* Ointment have been reduced in size to 1/15 of a wave length of light.

The ultra-microscopic size of the silver oxide particle permits veterinarians treating livestock to obtain effective penetration of tissue.

Living tissue exposed to Novoxil Ointment continues to be acted upon by the silver oxide as long as the oily reservoir of ointment remains. A continuing and sustained antiseptic action is thus maintained.

Case reports show that the use of Novoxil Ointment is also indicated for treatment of the following diseases:

Auricular Catarrh	Seborrhea
Rhinitis, with ulcers of the nose	Dermatitis
	Eczema
External Canker	Furunculosis

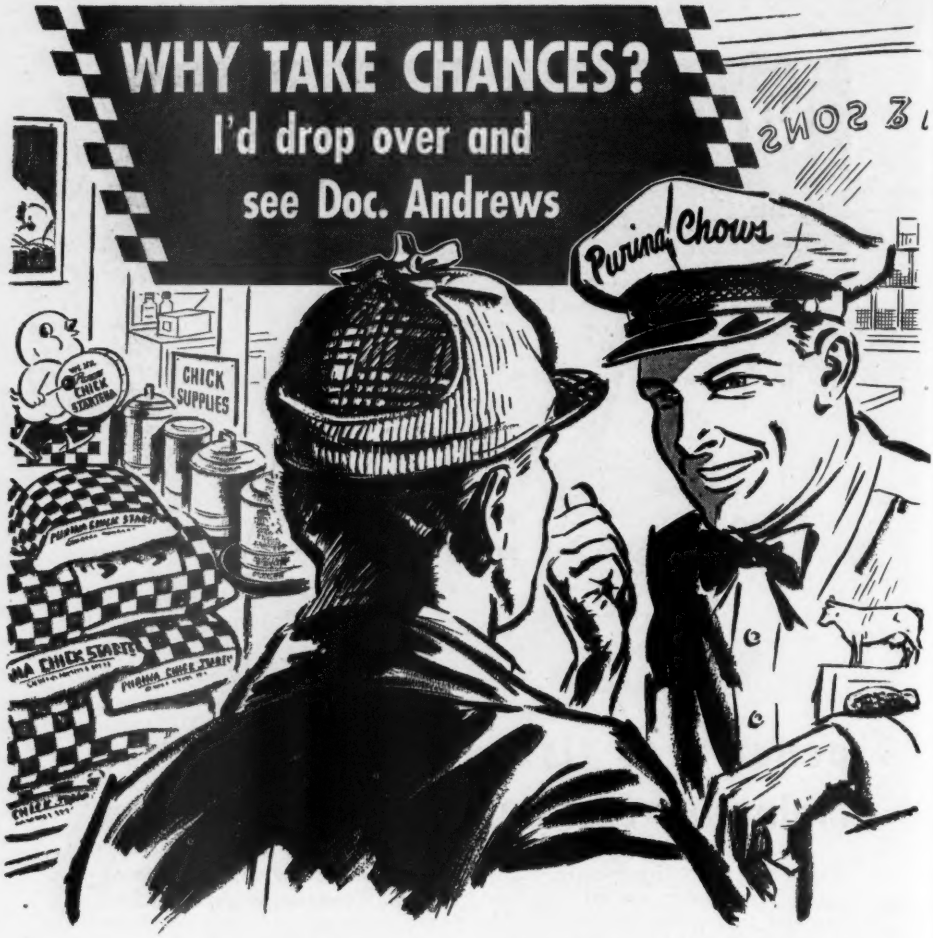
We urge you to get all the facts about Novoxil Ointment. Write today. Address Department VM-12, E. R. Squibb & Sons, *Veterinary and Animal Feeding Products Division*, 745 Fifth Avenue, New York 22, N. Y.

**Trademark registered*

SQUIBB —— A NAME YOU CAN TRUST

WHY TAKE CHANCES?

I'd drop over and see Doc. Andrews



PURINA Dealers are your friendly allies in the big job of keeping America's livestock healthy. Thousands of times each year the many Purina Dealers urge customers to "see your veterinarian."

Purina Dealers make their profits mainly from the sale of feed. Results are better . . . and sales much greater . . . when animals are disease-free. Hence it pays to recommend you, the veterinarian, whenever your services are required. Most Purina Dealers help to improve feeding results by recommending sound management and sanitation practices. Hence they assist *you* to maintain animal health in your community.

RALSTON PURINA CO.
St. Louis 2, Mo.

WORKING FOR A MORE PROSPEROUS AGRICULTURE

IT'S WORTH A FORTUNE TO ME

"When I think of the hours I used to spend keeping tax records, social security and other governmental reports and now compare it with the few minutes required for the simple, easy, non-technical "HISTACOUNT" bookkeeping system, why, it's worth a fortune to me."

NO BOOKKEEPING KNOWLEDGE NECESSARY

"HISTACOUNT"

banishes bookkeeping drudgery • eliminates tax worries • removes doubts and guesses • prevents overpayments • does away with last minute rushes.

Available at your local Medical, Surgical or Dental Supply Dealer.

No more worrying about taxes or records since I began using

Histacount

***"HISTACOUNT"* gives complete daily cumulative figures • provides income & expense records • tells all about taxes and depreciation • shows deductible items • takes only a few minutes a day • saves time, money, worry • meets all governmental requirements.**

"HISTACOUNT"

includes 365 daily pages, 12 monthly and one yearly summary sheets; social security and withholding tax forms; complete instructions; 400 pages in all! Extra heavy, stiff, durable binding, gold stamped. Loose leaf or plastic bound. Both priced at $6.75. Refills for loose leaf style are $3.35 a year.

PROFESSIONAL PRINTING COMPANY, INC.

America's Largest Printers to the Professions

FREE!

20 DAY TRIAL OFFER

We guarantee that if, for any reason whatsoever, HISTACOUNT is returned in good condition within 20 days, the purchase price will be instantly refunded.

PROFESSIONAL PRINTING CO., Inc.
15 East 22nd St., New York 10, N. Y.

If you prefer, order through your local Medical, Surgical or Dental Supply Dealer.

Gentlemen: Send me on approval:

☐ Loose-Leaf or
☐ Plastic-Bound "Histacount System

Enclosed herewith is ☐ Check; ☐ Money Order; in the amount of $6.75 in full. ☐ Send C. O. D.

SENT ON APPROVAL

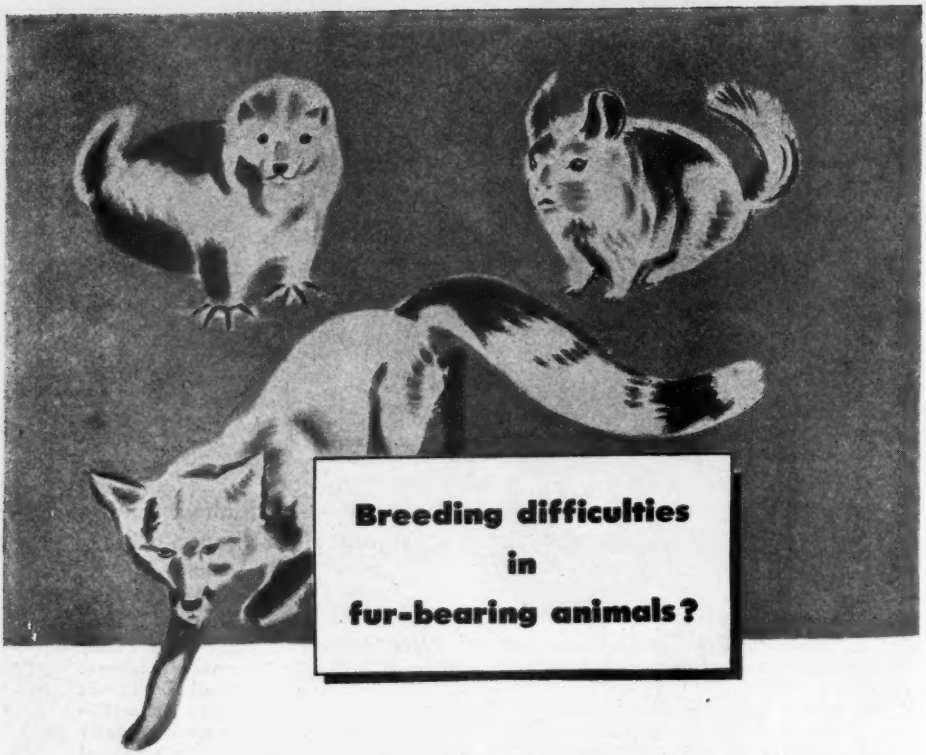
It is understood that if, for any reason, I return this system in good condition within 20 days, you will refund me $6.75 at once.

Doctor _____

Address _____

City _____ State _____

V.M.—12.46



Gonadogen* is a highly purified preparation of the gonad-stimulating hormone obtained from the blood of pregnant mares.

Gonadogen's stimulating action affects both males and females and is widely applicable whenever such treatment is necessary.

Breeding difficulties in fox, mink, and chinchilla due to functional disturbances, infantile gonads, and in certain cases lack of aggressiveness, may respond to the action of Gonadogen. Gonadogen will cause some animals to breed out of season.

Gonadogen is supplied as a sterile hypodermic tablet in which form the hormone remains potent. Each tablet is enclosed in a sterile rubber-capped vial accompanied by a vial of sterile physiologic salt solution for obtaining a solution for injection.

*Trademark, Reg. U. S. Pat. Off.

GONADOGEN

Upjohn
KALAMAZOO 99 MICHIGAN

DEPARTMENT OF VETERINARY MEDICINE

new acid-ester therapy for RINGWORM

(Trichophytosis; Barn Itch)

Clinical Evidence Indicates Ringworm Usually Disappears After 7 to 10 Days' Treatment

Clinical evidence shows that Ringworm in dairy cattle responds with gratifying promptness when Cerbinol Therapy is employed.

Cerbinol is the new Acid-Ester preparation which is enjoying such enthusiastic acceptance in the profession.

Cerbinol therapy consists of softening the encrustations with Cerbinol Ointment, then swabbing the affected area with Cerbinol Solution, full strength, for seven to ten days.

Cerbinol Therapy has also proved efficacious in treating Foot-rot and Ear Canker. And there have been no contraindications wherever Cerbinol has been used.

Cerbinol Solution and Cerbinol Ointment are sold only to graduate Veterinarians through any Veterinary supply house.

WESTBURY CHEMICAL CO., Inc.

405 LEXINGTON AVENUE, NEW YORK 17, N. Y.

Clinical Literature on Request

cerbinol

Jl. A.V.M.A., Vol. CVIII, No. 828, March 1946, pp. 169-171

*Trade-Mark

Vice-President Marshall (left), on his way to his inauguration

Way Back When

Way back in 1912, when America elected to the vice-presidency Thomas R. Marshall, the man who said, "What this country needs is a good five cent cigar"—that's when companies now units of Allied Laboratories, Inc., adopted the policy:

The advertisement reproduced above, appearing in the Country Gentleman, June 20, 1914, was the first public declaration of the policy of confining sales to members of the graduate veterinary profession and the first paid publicity to teach laymen to discriminate between graduate veterinarians and non-graduates, empirics and "quacks."

Sales to Graduate Veterinarians ONLY

Within two years, in some twenty leading farm publications, there was initiated a series of full page advertisements featuring the Graduate Veterinarian as the man best fitted, by education, training and experience, to administer the serum treatment for hog-cholera, and announcing the now famous policy "Sales to Graduate Veterinarians, *Only*"—now, as always, the undeviating policy of the entire organization.

Allied Laboratories, Inc.

operating

Pitman-Moore Co.
Sioux City Serum Co.
United Serum Co.
Royal Serum Co.
Sioux Falls Serum Co.

VETICILLIN* *Lederle*

BRAND OF PENICILLIN

OUTSTANDING EFFECTIVENESS

Penicillin is the safest, most practical and effective therapeutic agent available for bovine mastitis and for the control of many other infections caused by susceptible, Gram-positive pathogens. Penicillin exerts a powerful bacteriostatic action against many strains of streptococci and staphylococci, *Clostridium welchii* and other clostridia, actinomyces, *Bacillus anthracis, Erysipelothrix rhusiopathiae,* Corynebacteria, and Leptospira.

VETICILLIN, full strength penicillin, is tested to meet all the requirements for human parenteral use.

VETICILLIN brand of penicillin is being used extensively in the treatment of mastitis caused by *Streptococcus agalactiae,* and has proved highly effective in curing many infected quarters in a single course of intramammary injections.

VETICILLIN brand of penicillin has definite advantages over other products in general use for the therapy of bovine mastitis—It has proved safe and effective in either acute or chronic mastitis when properly administered—It can be used with equal effectiveness in either the dry or lactating cow—While it exerts tremendous bacteriostatic action on pathogenic bacteria in the udder, it is nonirritating to delicate udder tissue—If the mastitis is caused by organisms susceptible to penicillin, the cow is back in production sooner than when other treatment is used.

*Reg. U. S. Pat. Off.

PACKAGES

VETICILLIN—Vials of 100,000 and 200,000 Units.

STERILE SALINE SOLUTION (for preparing VETICILLIN Solution)—Vials of 250cc.

Listen to the latest developments in research and clinical medicine discussed by eminent members of the medical profession in the Lederle radio series, "THE DOCTORS TALK IT OVER," broadcast coast-to-coast every Monday evening over the American Broadcasting Company network and affiliated stations.

LEDERLE LABORATORIES DIVISION

American Cyanamid Company

30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.

You'll Be Interested to Know That . . .

Honors for Prof. Mitchell

Prof. William McGregor Mitchell, of recent date appointed Principal of the Royal (Dick) Veterinary College, Edinburgh, was elected president of the National Veterinary Medical Association of Great Britain and Ireland at the annual meeting of the association held at the Royal Veterinary College, London, September 22-27.

Prof. Mitchell has been on the staff of the Royal (Dick) College for 30 years and is a widely renowned surgeon. He served in World Wars I and II.

■

Pitman-Moore Expands

The Pitman-Moore Company, Division of Allied Laboratories, Inc., has acquired possession of property immediately to the west of its present pharmaceutical laboratories (1200 Madison Ave., Indianapolis), more than doubling the acreage which it owns at that site. A million dollar expansion program which will more than double the floor space devoted to pharmaceutical research and production has been inaugurated by the company. This will add three buildings to the company's present facilities. The largest will be an addition to the present pharmaceutical laboratory building. One complete story will be devoted entirely to research. With the exception of space on the first floor, which will be used to increase the office and shipping departments, the remainder will be used for production purposes. This addition will connect the present laboratories and a brick building consisting of three stories and basement, on the newly acquired property, which is being remodeled for manufacturing purposes.

A third building, being erected to the southwest of the present buildings, will include a pilot plant and will be devoted exclusively to research in antibiotics—including penicillin, streptomycin and tyrothricin.

In addition to this construction program, Allied Laboratories has completed two new buildings at its extensive biological laboratories located near Zionsville, Indiana.

Fur Farming Restrictions Lifted

Except that fox farmers and trappers shall not encroach on military or naval installations, all restrictions have been lifted in the Aleutian Islands.

■

Gaines Dog Research Center has found what it believes to be the oldest dog in U. S. at Rocky Mount, N. C. The dog, a male, is the offspring of a purebred Pekingese and an unknown sire, and was born in March, 1921. The great age of this dog seems well authenticated.

■

Veterinary Resolutions

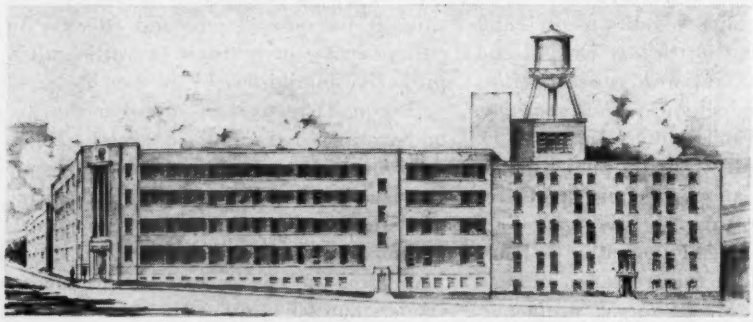
Resolution adopted by the Eastern Iowa Veterinary Association at the 33rd annual meeting, Cedar Rapids, Oct. 15-16, 1946:

Whereas, the public relations campaign of Associated Serum Producers, Inc., in behalf of the veterinary practitioner and the livestock industry is now reaching 6,000,000 families, and

Whereas, this campaign is using 22 farm magazines, 1218 daily newspapers, 2283 weekly newspapers, and 690 radio stations, at great cost, and

Whereas, these campaigns have continuously pointed out that it pays the livestock raiser to call his veterinarian promptly when in trouble, and

Whereas, the resultant prompt calls for veterinary service have been of value difficult to evaluate to the livestock industry;



Architect's drawing of the Morris street elevation of enlarged Pitman-Moore Pharmaceutical Laboratories

Therefore be it resolved: that the Associated Serum Producers, Inc., be commended and along with our praise, let us resolve to give the member companies our whole-hearted support and cooperation.

A resolution was adopted expressing appreciation to Dr. L. A. Merillat, "Who has aided this Association greatly in its public relations activities and in the presentation of scientific programs."

A third resolution, which was adopted, expressed grave concern at the prospect of the importation of livestock from any country harboring foot-and-mouth disease infection and urged upon the Chief of the Bureau of Animal Industry and the President that strict regulations be enforced to prevent the introduction of this disease into the United States.

Ch. Edgewood Gay Girl. Fed Armstrong! Owned by Mr. & Mrs. Clarence G. Collins, Hockessin, Delaware.

TOTAL NUTRITION

FOR WINNING CONDITION!

In 25-lb., 50-lb. bags

You'll Endorse Armstrong—It's So Simple, So Thrifty to Feed!

Enjoy the benefits offered you by this dog food that's really complete. Feed Armstrong Dog Meal regularly, exclusively . . . with confidence. Yes, and recommend it to your clients with pride.

Feeding Armstrong saves time, labor, money . . . consistently . . . and it gives dogs all the vitamins, all the minerals, all the food factors of all kinds that they're known to need. All in a scientific balance that a dog owner can't match, no matter what expensive meats, fancy groceries and vitamin concentrates he might mix together at home.

See for yourself that Armstrong is exactly the kind of dog food you want. Try it now. You can get started with a free professional sample, if you wish. Simply fill in and mail the coupon below . . . today.

Armstrong's TOTAL NUTRITION helps assure dogs of . . .

1. **MAXIMUM ENERGY AND ENDURANCE**
   Tests indicate dogs may have up to twice the stamina when fed Armstrong.
2. **GOOD DISPOSITION**
   Armstrong is really complete, offers all essentials for health, contentment.
3. **ALERTNESS AND RESPONSIVENESS**
   Minerals, vitamins, amino acids, other essentials in a new, scientific balance.
4. **MAXIMUM RESISTANCE TO DISEASE**
   Armstrong offers more than 2½ times the vitamins known to be required daily.
5. **MAXIMUM GROWTH AND DEVELOPMENT**
   Contains hemocellulose to aid digestion, assimilation and elimination in dogs.
6. **SLEEK, HEALTHY APPEARANCE**
   Formulated from new and improved ingredients for more food value per feeding.
7. **EAGER APPETITE**
   Made with liver meal plus meat meal.

Armstrong Food Company
SHERBURNE, NEW YORK
DIVISION OF THE BORDEN COMPANY

FREE—Full Size Sample

ARMSTRONG FOOD COMPANY
Sherburne, N. Y., Dept. 208-M
Division of The Borden Company

Gentlemen: Please send me a free professional sample of Armstrong Dog Meal.

Name .....

Address ..... State .....

City .....

Copr. 1946, Armstrong Food Company

Classified Advertisements

For Sale, Wanted, etc., $2.50 for 25 words or less; additional words, 8 cents, payable in advance. 25 cents extra when replies are sent in care of VETERINARY MEDICINE, 7632 S. Crandon Ave., Chicago. Copy must be received by the 3rd of month.

SPECIAL: 4 oz. Square Bottles with Metal Dauber Caps, $1.00 per dozen; $9.00 per gross; $42.50 for 5 gross. Arnold Laboratories, New Castle, Indiana.

WANTED TO PURCHASE a veterinary practice; half or all; in Idaho, Oregon, Washington or Utah. Address No. 608 care VETERINARY MEDICINE.

A five dollar check will bring you **"Doctor Please Tell Me."** A helpful book for educating your lay clientele. Dr. E. A. Schmoker, Rt. No. 2, Bothell, Wash.

POSITION WANTED: By married veterinarian as assistant or part ownership in mixed animal practice. Will graduate in December. Address T. W. Hallett, 433 Albert Ave., East Lansing, Mich.

FOR SALE: Large mixed practice in county seat town in Iowa. Only veterinarian in county. Includes a model brick home, office location and supplies. Address No. 615 care VETERINARY MEDICINE.

WANTED VETERINARIAN, Chicago Animal Hospital. Permanent position. Must be graduate of an accredited school. Living quarters furnished. In reply please give experience, references, etc. Address No. 624 care VETERINARY MEDICINE.

FOR SALE: Residence and other buildings in live town of 2,000. Mixed practice established 34 years. Good proposition for right man. Write for information. Address No. 619 care VETERINARY MEDICINE.

POSITION WANTED: 1944 graduate, single, recently discharged from the Service, desires position as assistant to veterinarian. Please write full details. Address No. 620 care VETERINARY MEDICINE.

POSITION WANTED: By recent graduate of accredited school, in large animal or mixed practice. Please write details in first letter. Available on short notice. Address No. 622 care VETERINARY MEDICINE.

FOR SALE: Established Southern California small animal hospital with separate house. Main thoroughfare location. City 8,000. No previous veterinary practitioner. 15 miles from Los Angeles. Address No. 621 care VETERINARY MEDICINE.

POSITION WANTED: Recently discharged veteran, Middlesex Graduate, with experience in large and small animals, desires position with veterinarian engaged in a mixed or small animal practice in Illinois. Address No. 614 care VETERINARY MEDICINE.

POSITION WANTED: Veterinarian available January 1, 1947, married. After three years in the service, anxious to become associated with practitioner or veterinary hospital. Prefer eastern location but will go anywhere if opportunity is inviting. Address No. 618 care VETERINARY MEDICINE.

FOR SALE: Established practice in Texas town of 12,000. Large and small animal practice; completely equipped. Excellent location in one of the largest milk sheds in state. Immediate possession. Cash or terms. Address No. 613 care VETERINARY MEDICINE.

WANTED VETERINARIAN: Excellent opportunity for qualifying single veterinarian, 35 to 45 years old. Experienced with small animals and able to assume responsibilities in a supervisory capacity. Must drive car. Permanent position, attractive salary and living quarters furnished. Locality Maryland. Address No. 616 care VETERINARY MEDICINE.

WANTED A VETERINARIAN to take over my practice. I am 77 years old and want to retire. Have an office for sale at a reasonable price, but want nothing for the practice. I'll help a new man get started without charge, my desire being that this community, which has been good to me, continues to have veterinary service available. Address No. 617 care VETERINARY MEDICINE.

Keep up on dog breeds and technical dog subjects through Dog World—1 yr. $2; 2 yrs. $3; 5 yrs. $6. Judy Publishing Co., 3323 Michigan Blvd., Chicago 16.

FOR SALE: Large animal practice, one hour from Chicago. Can be purchased reasonably, or will employ man on percentage basis if available immediately. Address No. 623 care VETERINARY MEDICINE.

FOR SALE: Veterinary hospital, West Hollywood, California, $45,000.00—averaging $1,200.00 monthly without medicine. Land, building, equipment included in price. Living quarters. Coldwell, Banker & Co., 6636 Hollywood Blvd., Los Angeles, California.

WANTED TO PURCHASE: A mixed practice, or an interest in one; about 60% small animal, 40% farm animals. I've had plenty of experience with both types. Prefer a town having a population of 20,000 or more. Address No. 610 care VETERINARY MEDICINE.

PHENOTHIAZINE

Unadulterated—Medicinal Grade

Prepaid Prices to Veterinarians

50 lb. drum. $42.50 **10 lb. drum. 9.00**
25 lb. drum. 22.50 **5 lb. drum. 4.75**
10 1 lb. cans.....$10.00

(Freight not paid)

160 lb. bag—Glauber's Salts (Tec) $2.40

Also Bicarbonate of Soda
Copperas—Epsom Salt (Tec) Copper Sulphate—Iodine—Niacin *Priced on request.*

AMERICAN NATIONAL MINERAL CORP.
HILLSBORO, INDIANA

Quarantine on Mexican Cattle Lifted

Following a joint Mexican-United States veterinary survey of the Mexican herds in which Zebu bulls were added during the past year, and since no signs of foot-and-mouth disease could be found, the quarantine established on June 5th was lifted October 18. Mexico ordinarily ships around 500,000 head of feeder cattle into the United States yearly.

FLEX-O MASTITIS DETECTOR

A simple, rapid, reliable indicator-paper test for milk derangement. This inexpensive test is meeting with increasing approval of veterinarians and dairy men all over the country.

Supplied in boxes of 50 at $6.00 per dozen postpaid

DAIRY REMEDIES CO., 120 High Street, Montclair, N. J.

Two for the Market!

Get them there faster with CUTTER B-T-V!

Fact! These pigs can get to market *weeks sooner*—if protected with Cutter B-T-V! It's the *safer* hog cholera control.

B-T-V presents a new, more effective method of controlling cholera—makes it possible for you to *wipe out* cholera in your community. Note these advantages:

B-T-V eliminates use of live virus . . . cuts out "virus breaks". . . keeps premises clean.

B-T-V won't cause vaccination stunting or post-vaccination "flare-ups."

B-T-V vaccinated hogs stay on full feed . . . generally gain faster . . . reach market quicker.

B-T-V is convenient — you can vaccinate *any time*, all or *part* of a herd.

Special note: B-T-V is the only hog cholera vaccine that rules out lay vaccination.

• • •

Your Cutter representative will be glad to tell you more about B-T-V. Or write direct to Cutter Laboratories, Berkeley, California; 111 N. Canal St., Chicago; 138 W. 53rd St., New York.

CUTTER

Fine Biologicals and Pharmaceutical Specialties

The Lamp Lighter

Jacob Riis first suggested the sale of Christmas Seals, to raise funds to fight tuberculosis. Sales began in 1907

■

There has been a sharp drop in meat production under federal inspection. Late in August it was 25% below that recorded for corresponding week of last year, according to report of U. S. Department of Agriculture.

— TOTAMIN B —

Recommend It with Confidence!

For the control and prevention of nutritional deficiency diseases in livestock and poultry. Compare this concentration of essential vitamins and minerals.

For dogs, cats and other small breed animals—recommend TOTAMIN A.

SUPPLIED ONLY TO THE VETERINARY PROFESSION

NUTRITIONAL METALS CORP.

20 Vine Street Dept. B Evansville, Indiana

Five prints of technicolor sound film "Training You to Train Your Dog" have been acquired by Gaines Dog Research Center, New York City. The center is making them available without cost for showings before various groups. The film is 16mm, runs 32 minutes and the narrator is Lowell Thomas.

■

Oklahoma A. & M. with a score of 2465 points from a possible 2700 won first place in the intercollegiate meat judging contest at the recent American Royal Stock Show in Kansas City, Mo. This team having won three times in succession now retains permanent possession of the trophy which is given by the National Live Stock and Meat Board. Kansas State College team trailed the winners by just 42 points.

★ FISTONE ★

The "FISTONE IDEA" is the idea of internal medication to activate cell nutrition to the maximum and of destroying focal facteria inaccessible to local treatment.

FISTONE has a decided tonic effect which will be found beneficial in all horses that have received treatment for intestinal parasites.

The oldest users are FISTONE'S strongest advocates. A trial will convince you.

THE FISTONE & APPLIANCE COMPANY
College Corner, Ohio

Trial order—One dozen boxes (once only)..$ 8.00
Regular Price one dozen boxes..... 10.00
One-half dozen boxes..... 5.00
(Add 20% outside U. S.)

Dr. .....

Address .....

Doctor!!

speaking of

MASTITIS

Dr. Miller, writing in the U. S. Dept. of Agri. Year Book says—

"Early detection is extremely important. FREQUENT USE of the Brom Thymol Test increases its efficiency."

In your inspection work and for making a quick, accurate Diagnosis, we believe you will find our popular Copyrighted—

KO-EX-7 Brom Thymol Mastitis DETECTORS

Dependable, inexpensive, and in many ways superior. So that you may know more about this better, Brom Thymol Detector, Doctor, we will be glad to send you a full size box for clinical purposes, FREE OF CHARGE. Just write us on your Professional letterhead or enclose your Professional card and address to

STERLING RESEARCH CORP.

775 Main Street, Dept M Buffalo 3, N. Y.

GOOD NEWS

EBERHARD FABER No. 5

BALL-POINT PEN

WITH CAPILLARY ACTION

available ***NOW***

THE FINEST OF ALL BALL-POINT PENS

Before offering any of the new ball-point pens to our thousands of clients in the professions, we waited for the 'truly perfect' pen and NOW IT IS HERE.

THE "BEST," says one of the well-known independent research organizations, after inspecting all ball-point pens.

It does everything that other Ball-Point Pens do, plus new, exclusive, special features. It writes on any surface—it can't drip—it can't leak—it can't smudge or blur—it dries instantly—no blotting necessary—it writes immediately—it writes for years without a refill—it comes in black, red, green, blue and brown. $18.00 including all taxes.

We know what doctors demand and need in an effortless writing pen and this is it.

ORDER FROM YOUR LOCAL SUPPLY HOUSE or direct from us.

We have made this pen available at your local medical, surgical or dental supply dealer, but if you prefer, you may order direct from us, by using coupon on the right.

PROFESSIONAL PRINTING COMPANY, INC.
15 East 22nd Street, New York 10, N. Y.

Gentlemen: Please send me.....EBERHARD FABER No. 5 Ball-Point Pens @ $18.00 each. Color desired.....

☐ Remittance enclosed.
☐ Send C.O.D. plus collection charges.

Name.....

Address.....

City.....State.....

VM

LOWER PRICES ON PENICILLIN

100,000 Oxford Units.....per vial $0.50
200,000 Oxford Units.....per vial .96
500,000 Oxford Units.....per vial 2.34

Acid Boracic Powder U.S.P.
5 lb. box.....$0.24 per lb.
25 lb. drum..... .18 per lb.

Ammonium Carb. Lumps U.S.P.
5 lb. S.C. Bottle.....$0.29 per lb.

Ammonium Chloride U.S.P.
5 lb. canister.....$0.37 per lb.
25 lb drum..... .26 per lb.

Chloral Hydrate Crystals
1 lb. S.C. Bottle.....$1.50 per lb.

Dextrose Powder U.S.P.
5 lb. canister.....$0.45 per lb.
25 lb. drum..... .35 per lb.

Iodine Crystals
1 lb. S.C. Bottle.....$2.80 per lb.

Iodoform Powder N.F.
1 lb. S.C. Bottle.....$2.80 per lb.

Sodium Pentobarbital U.S.P.
1 oz. S.C. Bottle.....$ 2.25 per oz.
4 oz. S.C. Bottle..... 8.05 per 4 oz.
1 lb. S.C. Bottle..... 29.00 per lb.

Sodium Perborate Powder
5 lb. box.....$0.39 per lb.

Strychnia Sulfate Powder U.S.P.
1 oz. S.C. Bottle.....$1.55 per oz.

Tartar Emetic U.S.P.
5 lb. canister.....$0.85 per lb.
25 lb. drum..... .78 per lb.

Urea Powder U.S.P.
5 lb. canister.....$0.35 per lb

Terms: 1% 10 days F.O.B. Chicago

AMERICAN CHEMICAL CO.
433 E. Erie, Chicago 11, Illinois

SPECIAL
DAIRMOL DUSTING POWDER FOR GRANULAR VAGINITIS
Antiseptic Astringent

"THE DAIRMOL WAY"

Compounded under the direction of two veterinarians of exceptional experience. Highly recommended by leading herdsmen as the best treatment for the purpose.

Also mfrs. of LIQUID Dairmol Antiseptic and Deodorant.

DALARE ASSOCIATES
23rd and Locust Sts. PHILADELPHIA 3, PA.

A $300 Fellowship for the ensuing year has been established at Texas A. & M. by the Brazos Valley Kennel Club to be given to a junior or senior student who has "demonstrated ability for carrying on research work in relation to dog breeding and prevention and treatment of diseases of dogs."

Veterinary Class Increased in Size

The number of students in the freshman class of the College of Veterinary Medicine, Ohio State University, this fall is the largest in years. A maximum of sixty students are usually admitted as freshmen, but this year 74—all but two of them veterans—were enrolled.

CALF SCOUR COMPOUND

with
VITAMINS
A Fish Oil Suspension of
BISMUTH
CALCIUM
SALOL
SULFAGUANIDINE
Plus
VITAMINS A, C, & D WITH NIACIN AND CHLOROBUTANOL

350cc Dispensing Size:
Dozen .....$ 9.00
2 Dozen 17.50
4 Dozen 34.00
Available without vitamins at $6 Dozen
Over $10.00 Prepaid Up to 10% of Invoice

ARNOLD LABORATORIES
SOLD TO VETERINARIANS ONLY
NEW CASTLE, INDIANA
"Everything for Veterinarians at Mail Order Prices"

Clinical effectiveness and convenience are two practical considerations which have securely established the use of Numotizine for its analgesic-decongestive effect in both large and small animal practice.

The liberal application of Numotizine has frequently resulted in preserving the usefulness of valuable animals in cases of orchitis, metritis and mastitis—in bronchitis, colds and pneumonia. Useful also in the treatment of abscesses, glandular swellings, contusions and lacerations—in involvements of joints, muscles and tendons.

Relieves pain and congestion; promotes improved circulation; picks up products of exudative processes—favors phagocytosis.

CONVENIENT—because it is easily applied and one application lasts 8 hours or more.

Supplied in 4, 8, 15 and 30-oz. jars; 3½-lb. containers; available on direct request.

NUMOTIZINE, Inc.

900 NORTH FRANKLIN STREET
CHICAGO, ILLINOIS

Formula:

Guaiacol	2.60	Methyl Salicylate	2.60	C. P. Glycerine and Aluminum Silicate q.s. ad 1000 parts	
Beechwood Creosote	13.02	Sol. Formaldehyde	2.60		

In spite of new "wonder" drugs,

THERAPOGEN

sales are still climbing. If you haven't tried it, why not do so now.

THEODORE MEYER EST.
213 South 10th Street
Philadelphia, Pa.

That chrome tanning of calfskin from the shoulder area makes the most satisfactory shoe leather is reported by the U. S. Department of Commerce.

■

The North Carolina Agricultural Experiment Station report that dehydrated sweet potato leaves are equal to dehydrated alfalfa in the feeding of poultry and livestock.

A correct diagnosis is half the cure . . . Diagnosis is professional; the dog owner never must be the veterinarian.—*Dog World.*

■

The grand champion steer at the American Royal Stock Show, late in October, sold for the all-time record price of $35.50 per pound. The 15-year-old owner received a check for $42,600 for this Hereford.

Dr. NAYLOR'S
Soft Surface TEAT DILATORS
medicated with
SULFATHIAZOLE

In addition to medication previously used, Dr. Naylor Dilators are now medicated with Sulfathiazole. Each Dilator is sterilized and impregnated with this most potent chemo-therapeutic agent for the prevention and control of infection in the teat canal.

A safe and dependable treatment for Spider Teats, Scab Teats, Cut and Bruised Teats, Obstructions and for keeping teat canal open after operating.

Dr. Naylor Dilators fit either large or small teats without overstretching or tearing, are easy to insert and stay IN the teat. They carry antiseptics and healing agents into teat canal to combat infection and promote healing. The Dilators themselves are Soft, Absorbent, Medicated dressings which protect the inflamed area, absorb inflammatory exudates and keep teat canal open in its natural shape while tissues heal.

PRICE TO VETERINARIANS

Dollar Package (contains 45 Dilators)	$8.00 Per Doz.
Fifty Cent Package (contains 16 Dilators)	4.00 Per Doz.
Plain Dispensing Package (contains 12 Dilators)	3.00 Per Doz.

H. W. NAYLOR CO., MORRIS, N. Y.

Helps Small Animals Look Better — Feel Finer — Live Longer

7,000 licensed, graduate veterinarians say so through their repeat orders. VpC Dog Food Supplement has enjoyed the good will and support of veterinarians, and their clients, for a quarter century. If such a record is not positive proof of value, then there can be no standard set on quality and results.

Where any one, or all, of its five feeding essentials are indicated, VpC Dog Food Supplement will prove worthy of the veterinarians' confidence.

Supplies:

(1) Vitamins A, D, B complex
(2) Calcium
(3) Phosphorus
(4) Trace Chemicals
(5) Iodine

Makes foods that fully feed out of foods that merely fill.

Ask for literature—postal card will do

Vitamineral Products Co., Peoria 3, Illinois

VpC Dog Food Supplement • Via-D-Mineral • Con-o-mineral • Viaferm

SOLD TO VETERINARIANS ONLY

Things You Should Know About Your New Peacetime Army

In order to raise and maintain on a volunteer basis the Army of 1,070,000 men estimated by the War Department as needed by July 1, 1947, it will be necessary to recruit an average of 40,000 men a month.

The U. S. Regular Army offers volunteer training in many skills and trades, ranging from aviation mechanics to cooking and welding.

The Army Medical School in combination with the Army Institute of Pathology, Washington, D. C., has one of the largest and most complete collections of equipment and material illustrating all phases of clinical and pathological laboratory examinations.

The Army's "navy" includes several hundred ships ranging from transports to ferry boats. The Army also operates its own railroads, including the 45-mile line at Aberdeen Proving Ground, and the 30-mile line across the Panama Canal Zone.

The American soldier might be called "the healthiest man in the world." The Army provides 13 doctors and 12 nurses for every 2,000 troops, with the finest medical equipment and hospital facilities. In World War I, deaths and disease totaled 156 in 10,000; in World War II, only six in 10,000. In peacetime, 5% of the Army's total enlisted strength is engaged in safeguarding the soldier's health.

Food inspectors of the Veterinary Corps, in 1945 alone, checked 8,271,175,085 pounds of food of animal origin purchased for the service, rejecting 246,349,652 pounds as unsatisfactory.

New pay scales increase enlisted men's pay from 50% (for privates) to 19% (for technical sergeants). It is estimated that, with hidden pay for free items, the average private has a take-home pay that equals or exceeds that of the average civilian worker.

The Army's retirement program permits a man to retire with one-half pay after 20 years' service or three-fourths pay after 30 years' Thus a master sergeant would get a monthly income for life of $107.25 (at the end of 20 years' service); or $185.63 (at the end of 30 years' service).

Coming Meetings

Interstate Veterinary Medical Association, 32nd Annual Meeting, Martin Hotel, Sioux City, Iowa, Nov. 21-22, 1946. Sec. H. C. Smith, Sioux City Serum Co., Sioux City, Iowa.

American Society of Animal Production, Hotel Sherman, Chicago, Ill., Nov. 29-30, 1946. Sec. W. G. Kammlade, Univ. of Illinois, Urbana.

United States Livestock Sanitary Association, Hotel Stevens, Chicago, Ill., Dec. 4-6, 1946. Sec.-Treas. R. A. Hendershott, 33 Oak Lane Ave., Trenton 8, N. J.

Nebraska State Veterinary Medical Association, 50th Golden Anniversary Meeting, Cornhusker Hotel, Lincoln, Dec. 11-12, 1946. Sec. L. V. Skidmore, College of Agriculture, Lincoln.

South Dakota Veterinary Medical Association, Dec. 11-12, 1946, Sioux Falls. Ch. Program Committee, R. M. Scott, 1501 S. Main Ave., Sioux Falls.

Alabama 22nd Annual Conference for Veterinarians, School of Veterinary Science, Alabama Polytechnic Institute, Auburn, Jan. 2-5, 1947. I. S. McAdory, Auburn, Ala.

Mississippi Veterinary Medical Association, Jan. 17-18, 1947. Sec. Glen D. Gates, Clarksdale.

Texas State Veterinary Medical Association, Rice Hotel, Houston, Jan. 20-21, 1947. Sec. E. A. Grist, Box 921, College Station.

California State Veterinary Medical Association Mid-Winter Conference, California

Canine Mineral
Fish Liver Oil-Yeast

for

Pregnant Females
Debilitated Animals
Growing Pups

1 doz. 1 lbs.....$4.30

Curts-Folse Laboratories
71 Central Ave.
Kansas City, Kansas

BEST of BREED
24 out of 25 times

CHAMPION
CARTREF
WISE COUNCIL

Owned by Mr.
W. A. McIlwaine,
Box 208,
Vienna, Virginia

FED ON

HUNT CLUB
DOG MEAL

● His photograph and impressive record of wins give emphatic evidence as to Council's perfect condition. His superb coat indicates the completeness and full nutritional balance of his diet. Hunt Club abundantly provides the meat proteins needed for strong muscles and vigorous growth, the minerals required for powerful frame development, the carbohydrates that build a reserve of energy and the vitamins needed for vibrant health.

We will gladly provide samples or further information on request.

MARITIME MILLING CO., BUFFALO 2, N. Y.

Quality Products

1914 - 1946

Produced for the exclusive use of the

Licensed Graduate Veterinarian

By

Grain Belt Supply COMPANY

4901 So. 33rd St.
Omaha, Nebraska

Member Associated Serum Producers, Inc.

Polytechnic School, San Luis Obispo, Jan. 6-8, 1947. Sec. Floyd H. White, Grand Ave. at Third St., San Rafael.

Minnesota State Veterinary Medical Society, Jan. 6-8, 1947. H. C. H. Kernkamp, University Farm, St. Paul 8.

Oklahoma Veterinary Medical Association, Skirwin Hotel, Oklahoma City, Jan. 13-14, 1947. Sec. C. H. Fauks, 505 Leonhardt Bldg., Oklahoma City 2.

Tennessee Veterinary Medical Association, Noel Hotel, Nashville, Jan. 13-14, 1947. Sec. A. C. Topmiller, 2620 8th Ave. S., Nashville 4.

Kansas Veterinary Medical Association, Wichita, Jan. 13-14, 1947. Sec. C. W. Bower, 3119 Stafford St., Topeka.

Intermountain Veterinary Medical Association, Salt Lake City, Utah, Jan. 13-15, 1947. Sec. M. L. Miner, Dept. Veterinary Science, Utah Agricultural College, Logan.

Indiana State Veterinary Medical Association, Hotel Severin, Indianapolis, Jan. 16-18, 1947. Sec. H. A. Lidikay, Darlington.

Iowa Veterinary Medical Association, Hotel Ft. Des Moines, Des Moines, Jan. 21-23, 1947. Sec. C. C. Franks, Capital City Bank Bldg., Des Moines.

Michigan Veterinary Medical Association, Jan. 22-23, 1947. Sec. B. J. Killham, Michigan State College, East Lansing.

Louisiana State University annual short course for veterinarians, Louisiana State University, Baton Rouge, Jan. 29-30, 1947. W. T. Oglesby, Head, Dept. of Veterinary Science, Louisiana State University.

Illinois State Veterinary Medical Association, Leland Hotel, Springfield, Jan. 29-31, 1947. Sec. W. D. Daugherty, 105 7th Ave., Sterling.

North Carolina State College Conference for Veterinarians, North Carolina State College, Raleigh, Jan. 28-31, 1947. Program Chairman, C. D. Grinnells, State College Station, Raleigh.

Chicago Veterinary Medical Association, Palmer House, the second Tuesday of each month. Sec. Robt. C. Glover, 1021 Davis St., Evanston, Ill.

Massachusetts Veterinary Association, University Club, Boston, the fourth Wednesday of each month. Sec. H. W. Jakeman, 176 Federal St., Boston 10.

FLEX-O MEDICATED TEAT DILATORS

are the only cloth covered dilators that contain no wires which might cause further infection or serious injury to the teat canal.

The soft woven cloth furnishes soothing protection to the injured lining while tissues heal and carries the medication inside the teat canal directly to the seat of the trouble.

FLEX-O Dilators are made in two sizes, Regular or Large packed in antiseptic ointment, 24 to jar, price 50c. Price to veterinarians $4. per doz. Jars postpaid.

DAIRY REMEDIES CO.
120 High Street, Montclair, N. J.

ARMOUR "FOWLER BRAND" ANTI-HOG CHOLERA SERUM

Potent
Effective
Dependable

SOLD TO GRADUATE
VETERINARIANS ONLY

ARMOUR and Company • VETERINARY DIVISION • KANSAS CITY 18, KANSAS

Oster
REG. U.S. PAT. OFF.

Now In Production

HEAVY DUTY
ANIMAL CLIPPER

The Veterinarians favorite clipper for use on dairy cattle. Smooth and quiet, it does not irritate the animal. Blades are 3" wide, weighs only 2¾ lbs.

SMALL ANIMAL CLIPPER

The instrument size clipper for fine work and for smaller animals. Has the exclusive detachable head feature. Weight 20 ounces.

JOHN OSTER
MANUFACTURING CO.
Dept. V-2, Racine, Wis.

Houston Veterinary Medical Association, the first Thursday of each month. Sec. Edward Lepon, Houston.

■

Deaths of Veterinarians

W. H. Empey, Battle Creek, Iowa, KCVC '16, died June 1, 1946, after a lingering illness. He served in World War I and had served as Mayor of Battle Creek where he had practiced since his graduation.

H. E. Pickeral, Manassas, Va., USVVC '08, died June 1, 1946.

H. L. Stewart, 78, Chariton, Ia., CVC 1894, died June 1, 1946.

W. P. Fink, 77, Atlantic City, N. J., NAT '95, died June 2, 1946. He had retired several years ago.

J. A. McGarry, Santa Cruz, Calif., CVC '96, died June 8, 1946. He had practiced in Santa Cruz since his graduation—52 years.

J. R. Morse, New Hampton, N. Y., CORN '13, died June 12, 1946. He served in World War I and had been Orange County Veterinarian for 20 years.

O. E. Blackburn, 56, Harlan, Ind., IND '11, died June 21, 1946. He had practiced at Harlan since shortly after his graduation.

C. E. Hart, 75, Hollywood, Fla., KCVC '05, died June 22, 1946. He had served in the meat inspection in the B.A.I. for 35 years but retired 10 years ago.

Norden

"TIME-TESTED" NORCALCINATES

They do not precipitate even after freezing

Calci-Chlor-Magnesium

For intravenous use in calcium and magnesium deficiencies.

250 cc $0.60
Case of 6..... 3.25

Norcalcinate 23%

For Milk fever and other calcium deficiencies.

Doz. 500 cc..... $ 7.50
3 Doz. 21.40

Norcalcidex

For Milk fever complicated with acetonemia. Calcium gluconate, 23%, Dextrose, 20%.

Doz. 500 cc..... $ 7.50
3 Doz. 21.40

Norcalciphos with Dextrose and Magnesium

For calcium, phosphorus, magnesium and dextrose deficiencies.

Doz. 500 cc..... $ 7.80
3 Doz. 22.20

Norden Simplex Intravenous Outfit

Simply slip over mouth of bottle and elevate to regulate flow.
No valves to break. Pure gum rubber.

NL 29 Norden Simplex Outfit..... $1.65

(Less 10% and 2%)

Now Available at All Norden Branches and Distributors

NORDEN LABORATORIES
"The Mark of Quality"
LINCOLN NEBRASKA

Extensive use of the Surgical Solution of Mercurochrome has demonstrated its value in preoperative skin disinfection. Among the many advantages of this solution are:

Solvents which permit the antiseptic to reach bacteria protected by fatty secretions or epithelial debris.

Clear definition of treated areas. Rapid drying.

Ease and economy of preparing stock solutions.

Solutions keep indefinitely.

The Surgical Solution may be prepared in the hospital or purchased ready to use.

Mercurochrome is also supplied in Aqueous Solution, Powder and Tablets.

HYNSON, WESTCOTT & DUNNING, INC.
Baltimore 1, Maryland

Ben Howes, 87, Albion, N. Y., ONT '87, died June 30, 1946.

M. J. Curran, 62, New Bedford, Mass., MCK '10, died July 7, 1946. He had practiced in New Bedford since shortly after his graduation.

Otis A. Bloomfield, Chillicothe, Ill., KCVC '18, died July 9, 1946.

T. M. Smiley, 71, Liberty, Mo., WEST '04, died July 11, 1946. He had practiced at Liberty for more than 40 years.

N. B. Jones, 78, Washington Court House, Ohio, ONT '89, died July 15, 1946, of cerebral hemorrhage.

William Nugent, 82, Dawson, Ill., KCVC '12, died July 16, 1946, of a heart attack. He was official veterinarian of the Buffalo, Illinois Horse Shows Association.

J. H. McElroy, 72, Lamoni, Ia., CVC '06 and ST JOS '13, died July 19, 1946. He practiced at Grantville, Mo., until 1937 and retired from practice in 1943.

E. L. Grubb, Boise, Idaho, KSC '18, died July 19, 1946, following an operation for gastric ulcers.

Frank C. Ryan, 65, Middletown, Md., died July 21, 1946, of a cerebral hemorrhage. He had practiced in Middletown for over 30 years.

Jas. L. Gibbons, Montesano, Wash., ISC '36, died in July, 1946.

D. S. Weaver, 57, KSC '16, Coon Rapids, Iowa, died Aug. 2, 1946, of a cerebral hemorrhage. He served in World War I.

Charles A. Jones, Wapato, Wash., died August 7, 1946. Doctor Jones received his veter-

GUARANTEED TO GIVE SATISFACTION

M·A·C

ACCEPTED AND USED BY THE PROFESSION SINCE 1900

IN THE TREATMENT OF
Splints, Spavins, Curbs, Side Bones, Inflamed Tendons, Bursal Lameness, Etc.

Single Bottle	$ 2.00
1-4 Dozen and One FREE	5.00
1-2 Dozen and Two FREE	8.00
1 Dozen and Four FREE	15.00
2 Dozen and Eight FREE	25.00

AGENTS
Wingate Chemical Co. MONTREAL
Kentucky Serum Co. LOUISVILLE, KY.
CARTER-LUFF CHEMICAL CO.
The Originators of Packaged Medicines for Veterinarians
HUDSON, N. Y.

CASES OF FOLLICULAR MANGE IN DOGS

***TREATED WITH* GOODWINOL!**

The prompt eradication of the itch mite—the rapid relief of itching and scratching—the fast healing of the lesions in all of a clinically controlled series of 443 cases of follicular mange . . . these results bear vivid testimony of the efficacy of GOODWINOL. • Rapidly promoting the growth of new hair, this greaseless, odorless, non-toxic, wash-off ointment (containing rotenone and orthophenylphenol in a cholesterin base) *does not injure the eyes*, is very economical—a little does a lot—and is sold only to veterinarians for dispensing. Samples available to veterinarians upon request.

AVAILABLE: From your local veterinary supply house or from the manufacturer—in 1 oz tubes; or in 1, 2, 5, or 10 lb. tins.

GOODWINOL PRODUCTS CORP. • 90 PRINCE ST., NEW YORK, N. Y

GOODWINOL

Relieves itching quickly

inary degree from Washington State, and after several years of practice he took graduate work at Toronto Veterinary College and McKillip Veterinary College.

Sam Atchison, 79, Brooklyn, N. Y., NYC 1887, died August 12, 1946.

H. C. Sorensen, Paso Robles, Calif., ST. JOS '14, died August 12, 1946.

J. G. Schoenberger, Winterset, Ia., ISC '11, died August 14, 1946.

E. W. Bolton, 60, Washington Court House, Ohio, OSU '19, died Aug. 28, 1946. He had practiced at Washington Court House since his graduation.

J. A. Owens, El Paso, Ill., together with his wife, was drowned while on a vacation at Vermilion Bay, Canada, August 29, 1946. He was formerly president of the Illinois Veterinary Medical Association and had served on the Board of Education of El Paso.

Alfred Schwarz, 69, Chicago, Ill., MUN '98, died September 1, 1946. He was born in Germany and had served as food inspector in Chicago.

R. T. Ingle, Farmington, Mich., ONT '38, died September 15, 1946. He had served in World War II and entered practice in Farmington after the close of the war.

John Boylan, Drexel Hill, Pa., UP '12, died in the Philadelphia General Hospital, Sept. 20, 1946.

T. J. Sharpe, Central City, Iowa, St.JOS '23, died September 20, 1946, after a brief illness.

Wm. T. Pritchard, Ashland, Nebr., KCVC '07, died suddenly while operating on a puppy, October 23, 1945. He was 73 years old on the day of his death.

BUY U. S. SAVINGS BONDS

McKeon's

"Sulpho Dip"

TRADE MARK REG'D

for

Parasitic skin diseases on large and small animals. Safe, economical, effective.

Trial gallon on 30 days' approval—$3.00

SOLD TO VETERINARIANS ONLY

(Fool-proof in hands of laity.)
Sample FREE. Ask for yours.

Sulphur Products Co.

Greensburg, Pa.

Distributors wanted in certain territories.

Roccal

DEPENDABLE DISINFECTANT

There is obviously a definite advantage in the use of a disinfectant in your practice that does not leave an obnoxious odor about the clothing, person or premises.

In addition to fulfilling this requirement, ROCCAL is

Detergent and Cleansing
Nonirritating to the Hands
Economical

Wide Range of Usefulness

ROCCAL is eminently useful as a germicide. It is not for surgical use but is intended for the general disinfection of floors, walls, kennels, stables, operating tables, furniture, wash tubs, eating and drinking utensils.

Supplied in 1 gallon bottles of a 10% solution

WINTHROP

Roccal

Reg. U. S. Pat. Off. & Canada
Brand of BENZYL TRIALKONIUM CHLORIDE

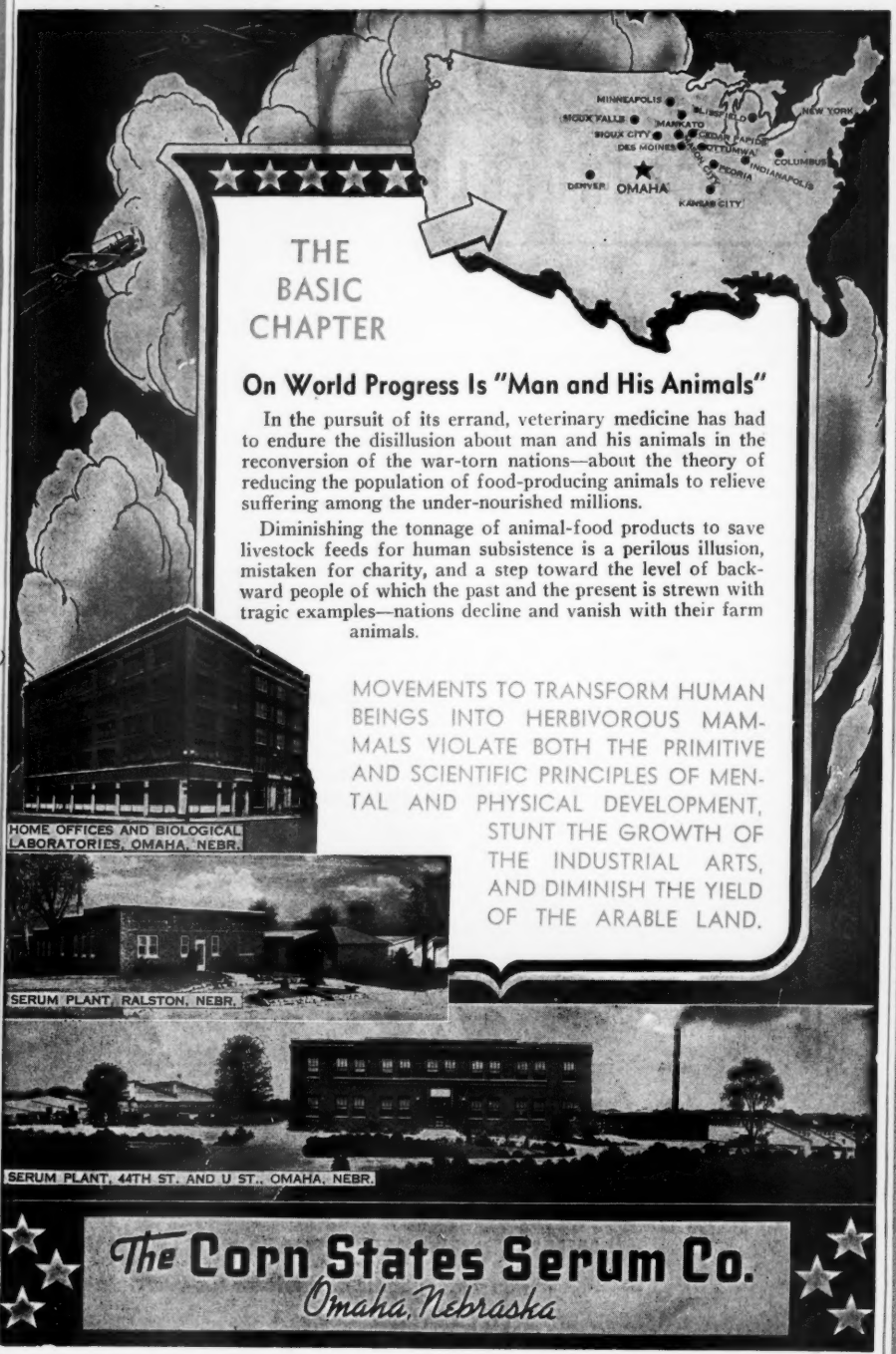
(Alba Pharmaceutical Company has been consolidated with Winthrop Chemical Company, Inc.)

Informative Data Sent on Request

WINTHROP CHEMICAL COMPANY, INC.

Pharmaceuticals of merit for the veterinarian

New York, N. Y. Windsor, Ont.


MINNEAPOLIS
SIOUX FALLS
SIOUX CITY
DES MOINES
MANKATO
CEDAR RAPIDS
OTTUMWA
PEORIA
DENVER
OMAHA
KANSAS CITY
INDIANAPOLIS
COLUMBUS
NEW YORK
THE BASIC CHAPTER
On World Progress Is "Man and His Animals"
In the pursuit of its errand, veterinary medicine has had to endure the disillusion about man and his animals in the reconversion of the war-torn nations—about the theory of reducing the population of food-producing animals to relieve suffering among the under-nourished millions.
Diminishing the tonnage of animal-food products to save livestock feeds for human subsistence is a perilous illusion, mistaken for charity, and a step toward the level of backward people of which the past and the present is strewn with tragic examples—nations decline and vanish with their farm animals.
MOVEMENTS TO TRANSFORM HUMAN BEINGS INTO HERBIVOROUS MAMMALS VIOLATE BOTH THE PRIMITIVE AND SCIENTIFIC PRINCIPLES OF MENTAL AND PHYSICAL DEVELOPMENT, STUNT THE GROWTH OF THE INDUSTRIAL ARTS, AND DIMINISH THE YIELD OF THE ARABLE LAND.
HOME OFFICES AND BIOLOGICAL LABORATORIES, OMAHA, NEBR.
SERUM PLANT, RALSTON, NEBR.
SERUM PLANT, 44TH ST. AND U ST., OMAHA, NEBR.
The Corn States Serum Co.
Omaha, Nebraska